pp. 855–936] [December, 1938

TROPICAL DISEASES BULLETIN

Vol. 35.] 1938. [No. 12.

IMPERIAL MYCOLOGICAL INSTITUTE
20 DEC. 1938

Main Contents:

TROPICAL OPHTHALMOLOGY.
LEISHMANIASIS.
LEPROSY.
MALARIA.
MISCELLANEOUS.

For detailed Contents see pp. ii, iv, vi, vii & viii.

Issued under
the Direction of the
Honorary Managing Committee of the
BUREAU OF HYGIENE AND TROPICAL DISEASES,
Keppel Street, London, W.C.1.

Price 2/6 Net.] *Entered as Second Class Matter in the U.S.A. Post.* [Annual Subscription 21/-, With Supplement 25/-.

HONORARY MANAGING COMMITTEE

APPOINTED BY THE SECRETARY OF STATE FOR THE COLONIES.

Chairman :

A. J. R. O'Brien, C.M.G., *M.C.*, M.B., Ch.B., M.R.C.P., D.P.H.
(*Chief Medical Adviser to the Secretary of State for the Colonies*).

Wm. Horner Andrews, D.Sc., M.R.C.V.S.

Thomas Carnwath, *D.S.O.*, D.Sc., M.B.]
(*representing the Ministry of Health*).

Sir Arthur Horn, C.M.G., M.D., M.R.C.P.

Professor W. W. Jameson, M.D., F.R.C.P.

Professor Sir John Ledingham, C.M.G., LL.D., D.Sc., M.B., F.R.C.P., F.R.S.
(*representing the Royal Society*).

G. Carmichael Low, M.D., F.R.C.P.

P. H. Manson-Bahr, C.M.G., *D.S.O.*, M.D., F.R.C.P., D.T.M. & H.

Major-General Sir John Megaw, K.C.I.E., K.H.P., M.B., Ch.B., I.M.S. (retd.).

Sir Edward Mellanby, K.C.B., M.D., F.R.C.P., F.R.S.
(*representing the Medical Research Council*).

H. E. L. Montgomery, *M.C.*
(*representing the Foreign Office*).

J. A. Calder
(*of the Colonial Office*).

Secretary : J. B. Sidebotham, *of the Colonial Office.*

STAFF OF THE BUREAU :

Director :

H. Harold Scott, C.M.G., M.D., F.R.C.P., D.P.H., D.T.M. & H.

Assistant Director :

C. Wilcocks, M.D., Ch.B.

Secretary :

R. L. Sheppard.

SECTIONAL EDITORS, TROPICAL DISEASES BULLETIN.

Professor P. A. Buxton, M.A., M.R.C.S., L.R.C.P., D.T.M. & H.

Lt.-Col. E. D. W. Greig, C.I.E., D.Sc., M.D., F.R.C.P.E., I.M.S. (retd.).

Major-General D. Harvey, C.B., C.M.G., C.B.E., M.D., R.A.M.C. (retd.).

Lt.-Col. W. F. Harvey, C.I.E., M.B., F.R.C.P.E., D.P.H., I.M.S. (retd.).

Professor Edward Hindle, M.A., Sc.D., Ph.D.

Lt.-Col. H. Kirkpatrick, M.B., B.Ch., I.M.S. (retd.).

Lt.-Col. Clayton Lane, M.D., I.M.S. (retd.).

Lt.-Gen. W. P. MacArthur, C.B., *D.S.O.*, O.B.E., M.D., D.Sc., D.P.H., F.R.C.P., F.R.C.P.I., K.H.P.

Lt.-Col. A. G. McKendrick, D.Sc., M.B., Ch.B., F.R.C.P.E., I.M.S. (retd.).

Maj.-Gen. Sir Leonard Rogers, K.C.S.I., C.I.E., M.D., F.R.S., I.M.S. (retd.).

Hugh Stannus Stannus, Ph.D., M.D., F.R.C.P., D.T.M. & H.

M. Sydney Thomson, M.A., M.D., F.R.C.P.

C. M. Wenyon, C.M.G., C.B.E., M.B., B.S., B.Sc., F.R.S.

F. Norman White, C.I.E., M.D., D.P.H., I.M.S. (retd.).

Professor Warrington Yorke, M.D., F.R.C.P., F.R.S.

BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 35.] 1938. [No. 12.

TROPICAL OPHTHALMOLOGY.

A Review of Recent Articles. XXX*

Conjunctiva—Trachoma.—Some scepticism regarding the specific nature of the various bodies found in the conjunctival epithelium of trachomatous patients is recorded by Grüter.[1] He has made a careful study of material obtained from the cornea of rabbits and human subjects and the action thereon of various irritants—variola vaccine, herpes, staphylococcic toxin, mustard oil, trachoma and blennorrhoeic conjunctivitis—and he has reached the conclusion that inflamed trachomatous epithelial cells cannot be shown to contain any granular structures of a nature differing from their own. His investigations disclosed no evidence to support the view that the various granular structures described in the literature were the initial structures of a hitherto invisible disease germ in the tissues. He considers the "trachoma rickettsias" described by Busaca to be inflammatory proliferations and divisions of granula which normally occur in the epithelial cells. Evidence in favour of the specific nature is offered by Julianelle[2] who for the past six years has studied experimental trachoma in monkeys. Admittedly this experimental disease is a folliculosis of the conjunctiva unassociated with pannus or cicatrization, but it appears to be provoked solely by the inoculation of trachomatous material.

Assuming that this experimental disease is a true trachoma, the author's observations led him to conclude that the disease is an infection independent of associated factors such as constitution, nutrition, co-related infection, etc., and that the infecting agent is a virus characterized "by low infectivity, occasional filterability, marked tissue specialization, ineffectual immunogenic properties, slight propagative capacity, sensitivity to physical and chemical agents, and the accompaniment of inclusion bodies." This virus may be a rickettsia and the cause of the inclusion body or its component parts. Toulant[3] considers that trachoma may exist in a latent form

* For the 29th of this series, see Vol. 35, pp. 411–415.

[1] Grüter (Wilhelm). The Microstructure of Epithelial Cells and its Importance for the Aetiology of Trachoma.—*Brit. Jl. Ophthalm.* 1938. May. Vol. 22. No. 5. pp. 300–303.

[2] Julianelle (L. A.). Studies on the Pathogeny of Trachoma.—*Brit. Jl. Ophthalm.* 1938. June. Vol. 22. No. 6. pp. 336–344. [30 refs.]

[3] Toulant. Le trachome fruste.—*Rev. Internat. du Trachome.* 1938. Apr. Vol. 15. No. 2. pp. 65–73. [21 refs.]

free from the development of conjunctival granulations and corneal pannus; cicatrization also is too indefinite to afford any aid in diagnosis. Symptoms may be very mild. The author deprecates any drastic method of treatment and indeed states that the disease may often undergo a spontaneous cure. [It is extremely doubtful if the condition described bears any relation to trachoma. Attention to the state of the general health and the correction of any error of refraction are likely to prove the most suitable treatment.]

In discussing this paper MacCallan[4] remarked that follicles might be masked by the presence of a papillary hypertrophy, or might be absent owing to a generalized lymphocytic infiltration without the aggregation of lymphocytes into follicles. If neither follicles nor a subepithelial infiltration were present the case was not one of trachoma. If either was present a vascular infiltration of the upper portion of the limbus developed soon after trachomatous infection. To justify the recognition of the condition described the subject must infect with undoubted trachoma an absolutely non-trachomatous patient in a totally non-trachomatous environment. The incidence of trachoma in the countries of the world other than Dominions, Colonies and Mandated Territories of Great Britain has been reviewed by MacCallan[5] in an article of considerable interest. A curious feature of the epidemiology is the manner in which some small communities, as in Mecca, preserve comparative immunity though situated in the midst of heavily infected populations. As one would expect the disease is most prevalent in those countries where bad hygienic conditions exist, especially when such are associated with dusty winds and a high climatic temperature. In view of the possible rickettsial nature of the trachoma virus Poleff and Nain[6] have examined the serum of trachomatous patients in Morocco and have found Weil-Felix reaction positive in a high proportion of cases and regard this as evidence in support of the rickettsial origin of the disease. The clinical value of the test is not yet proved.

Cornet[7] has examined over 4,000 scholars in Cambodia with a view to determining the influence there of adenoidism on trachoma. He found the incidence of naso-pharyngeal adenoid growths to be fifteen per cent. higher in trachomatous subjects than in the non-trachomatous, but ten per cent. of the trachomatous were free from enlarged tonsils and adenoids. Naso-pharyngeal adenoids were very common in cases in which the diagnosis of trachoma was doubtful.

Spring Catarrh.—For the treatment of severe cases of this disease Shimkin[8] advocates the complete removal of the tarsal conjunctiva.

---

[4] MacCallan. [Discussion of Toulant's paper above.]—*Rev. Internat. du Trachome.* 1938. July. Vol. 15. No. 3. pp. 109–111.

[5] MacCallan (A. F.). The World-wide Distribution of Trachoma, excluding the Dominions, Colonies and Mandated Territories of Great Britain.—*Brit. Jl. Ophthalm.* 1938. Sept. Vol. 22. No. 9. pp. 513–541.

[6] Poleff (L.) & Nain (M.). La réaction de Weil-Félix dans le trachome et sa valeur théorique et clinique.—*Rev. Internat. du Trachome.* 1938. July. Vol. 15. No. 3. pp. 113–126.

[7] Cornet (Emmanuel). Enquête ophtalmologique et pharyngée des élèves des écoles de Pnom-Penh. Trachome et affections lymphadénoides du pharynx.—*Rev. Internat. du Trachome.* 1938. Apr. Vol. 15. No. 2. pp. 74–84.

[8] Shimkin (N. I.). Antepositio Conjunctivae Fornicis. Operation in Severe Cases of Spring Catarrh.—*Brit. Jl. Ophthalm.*—1938. May. Vol. 22. No. 5. pp. 287–295. With 1 fig.

The operation resembles that for combined excision, but the tarsal plate is left in position and the conjunctiva removed is limited to that portion of the membrane which covers the tarsus. It is necessary to excise the membrane right up to its conjunction with the skin at the lid margin in order to obviate the recurrence of papillae. The conjunctiva of the fornix is drawn down over the denuded tarsus and attached to the lid margin by three sutures placed respectively at the centre, at the junction of the outer and middle third and at the junction of the inner and middle third. If the tarsus is found to be trachomatous it can be removed and a combined excision performed.

Glaucoma.[9]—Although primary non-congestive glaucoma is likely often to be caused by a general systemic disturbance, *epidemic dropsy* is the only disease in which the association is hitherto known to be constant. KIRWAN and MUKERJEE have discussed the changes induced by the disease which are likely to lead to the development of a high intraocular pressure. The authors state that in epidemic dropsy a toxic agent is present in the plasma which produces a general dilatation of the capillaries and an increased permeability of their endothelial walls; this change is shared by the uveal capillaries and results in a marked increase of albumen in the aqueous humour, whilst the globulins remain the same. The blood in epidemic dropsy contains a histamine-like base, which, it is believed, brings about an increased permeability of capillaries as well as a dilatation. The difference between the osmotic pressure of the blood serum in the aqueous is considerably reduced by the presence of proteins in the aqueous and the concentration of chlorine ions diminishes in the aqueous and increases in the serum. The evidence supports the view that in epidemic dropsy glaucoma the filtration of fluid into the anterior chamber takes place by the process of dialysation as usual, but that the equilibria concerned are at a level different from that of normal subjects, due probably to the altered permeability of the dialysing membrane. *H. Kirkpatrick.*

[9] KIRWAN (E. O'G.) & MUKERJEE (S. N.) The Osmotic Pressure of the Aqueous Humour in Epidemic Dropsy Glaucoma.—*Brit. Jl. Ophthalm.* 1938. June. Vol. 22. No. 6. pp. 329–336. [12 refs.]

LEISHMANIASIS.

LAURINSICH (A.). Dati statistico-clinici dal 1916 al 1936 raccolti nell'ambulatorio anti-kala-azarico della R. Clinica Pediatrica di Napoli. [**Kala Azar Statistics from the R. Clin. Pediatrica, Naples, 1916–1936.**]—*Pediatria.* 1937. Nov. 1. Vol. 45. No. 11. pp. 957–966. With 7 graphs & tables.

During the period 1916–1936 there have been treated at the clinic for pediatrics at Naples 844 cases of infantile kala azar. During the first ten years of this period there was an increase in the number of cases seen but subsequently the numbers diminished steadily. This rise and decline of the incidence appears to be due in the first place to a realization by the people of the good effects of treatment and secondly to the influence the treatment itself has had on the spread of the disease. The cases have been widely scattered, without any tendency for the disease to occur in epidemic form. In any individual focus, such as a village, the cases have often been limited to one or two streets. As regards the commencement of the disease, the first symptoms were most frequently observed in the months June to September, with a concentration in the last named month. Judging by the age at which the first symptoms were noted the disease commenced most frequently in infants between a year and eighteen months old. Since the introduction of the tartar emetic treatment by DI CRISTINA and CARONIA there has been a steady improvement in the method of administration of this drug, so that the mortality rate amongst treated cases has fallen from 15 per cent. to 6·35 per cent. The number of doses per case to effect a cure has varied from 84 to 8 with an average of 20 to 40. These have been administered twice a week. The experience at Naples has been that, though the organic antimony compounds offer certain advantages over tartar emetic, this drug is a more active remedy which it has not been found necessary to abandon.

C. M. Wenyon.

ANDERSON (Charles). Chronique du kala-azar en Tunisie. [**Chronicle of Kala Azar in Tunisia.**]—*Arch. Inst. Pasteur de Tunis.* 1938. Mar. Vol. 27. No. 1. pp. 96–104. With 1 map.

The last paper in this series, which gives details of cases of kala azar observed in Tunisia, appeared in 1934. The present paper extends the record to the end of 1937 with the description of a further eight cases, bringing the total number of cases observed in the country since the discovery of the first by CATHOIRE in 1906 to 131. The distribution of the cases of kala azar and oriental sore is shown on a map, while the incidence of the disease amongst the various nationalities according to age and sex is discussed. *C. M. W.*

BOISSERIE-LACROIX, TRAISSAC (Marcel) & DEPRECQ. Kala-Azar infantile. [**Infantile Kala Azar.**]—*Jl. Méd. de Bordeaux.* 1938. May 7–14. Vol. 115. Nos. 19–20. pp. 510–511.

The case described is that of a child 30 months old who was found to have kala azar. Though the child was living at the time in the

suburbs of Bordeaux the disease was contracted in Nice. The diagnosis was made by spleen puncture after sternal puncture had failed to reveal leishmania. There was a good response to neostibosan treatment. *C. M. W.*

PÉHU & BERTOYE (P.). Trois cas, non méditerranéens, de kala-azar infantile, autochtones: Vosges, Ardèche, Isère. [**Three Cases of Infantile Kala Azar outside the Mediterranean Region.**]—*Bull. Acad. Méd.* 1937. Nov. 16. 101st Year. 3rd Ser. Vol. 118. No. 34. pp. 342–344.

Cases of kala azar in both adults and children are commonly met with in the South of France on the Mediterranean littoral, which is to be regarded as an endemic centre of the disease. Cases encountered in other parts of France generally give a history of residence in the endemic zone. In this paper the authors mention three cases in children in which there had never been residence in the south of France. One of these cases came from the district of the Vosges, one from the mountainous Ardèche region and the third from Vinay, near Grenoble. *C. M. W.*

KIRIMLIDIS (D.). Beobachtungen ueber infantile Kala-Azar in der Provinz Argolis (Peloponnes, Griechenland). [**Infantile Kala Azar in the Province of Argolis, Greece.**]—*Muench. Med. Woch.* 1938. July 29. Vol. 85. No. 30. pp. 1143–1146. With 3 figs. [20 refs.]

During a three years' residence in the Province of Argolis in the Peloponnesus, Greece, the author encountered over 200 cases of infantile kala azar, of which he was responsible for the treatment of 80. The disease is widespread in the eastern half of the province, where it is well known to the people, who recognize it on account of its main symptoms of fever, anaemia, enlargement of the spleen and petechiae, the local name for which suggests flea bites, which they resemble. Though malaria is endemic in the same area cases of double infection are rare. In one case a diagnosis of a mixed infection was made by the discovery in material from spleen puncture of both leishmania and the parasite of benign tertian malaria. The disease in its clinical features, complications and response to treatment with neostibosan resembles infantile kala azar as it occurs in other endemic areas. It is noted that in one particular group of villages there were so many cases that the disease could be regarded as having assumed an epidemic form, hardly a single household having escaped the infection. *C. M. W.*

RUDNEV (G. P.). Leishmaniose viscérale en Daghestan. [**Visceral Leishmaniasis in Daghestan.**]—*Med. Parasit. & Parasitic Dis.* Moscow. 1938. Vol. 7. No. 2. [In Russian pp. 234–235.]

This is the first record of a case of visceral leishmaniasis in a native of Daghestan [roughly between 41° and 43°N. along the east coast of the Caucasus]. It was diagnosed by a positive Ray's reaction (with negative controls), by Frey's adrenalin test, and by the finding of isolated parasites enclosed in monocytes on the examination of thin and thick blood films, though smears from spleen puncture failed to reveal any Leishman-Donovan bodies. *C. A. Hoare.*

SHORTT (H. E.) & SWAMINATH (C. S.). **The Viability of *Leishmania donovani* excreted in the Nasal Mucus in Indian Kala-Azar.**—*Indian Jl. Med. Res.* 1937. Oct. Vol. 25. No. 2. pp. 341–343.

In a previous paper the authors have recorded the finding of *Leishmania donovani* in the nasal mucus from cases of Indian kala azar. In the present paper they report the finding of parasites in the nose mucus of six of fifteen further cases examined. A hamster was infected by the intraperitoneal injection of the nasal mucus from one of the cases, which was in a man who became ill a year after coming to Coimbatore from Malabar. In neither of these districts has kala azar been previously reported. *C. M. W.*

ADLER (S.). **Factors determining the Behaviour of Leishmania sp. in Sandflies.**—*Harefuah.* Jerusalem. 1938. Jan.–Feb. Vol. 14. No. 1–2. [In Hebrew pp. 4–8. English summary pp. I–II.]

The author has compared a Cretan with a Palestinian strain of *Leishmania tropica* as regards its power to develop in *Phlebotomus papatasi* in the presence of varying quantities of inactivated rabbit serum. In the case of the Cretan strain, which is normally transmitted by *P. sergenti*, infection of the sandfly *P. papatasi* occurs with difficulty if the flagellate emulsion ingested is made up with 50 per cent. serum. On the other hand with only 10 per cent. serum present infection of the sandfly readily takes place. With the Palestinian strain, of which *P. papatasi* is the natural transmitter, infection occurs readily without regard to the serum concentration of the emulsion. It is suggested that in the case of *P. sergenti* the flagellates may be destroyed by the products of digestion of serum or that the sandfly produces antibodies injurious to the flagellates in the presence of concentrated serum.

C. M. W.

SOUTHWELL (T.) & KIRSHNER (A.). **On the Transmission of Leishmaniasis.**—*Ann. Trop. Med. & Parasit.* 1938. Apr. 28. Vol. 32. No. 1. pp. 95–102. [30 refs.]

The authors discuss the mechanism of transmission of kala azar by sandflies and maintain that proof has not yet been obtained that the the flagellate forms of *Leishmania donovani*, whether from the culture tube or from the gut of the insect, are infective to hamsters or other experimental animals. It has been frequently shown that these cultural forms from the culture tube and from the fly are infective by a number of different routes of inoculation but it has not been possible to exclude in these experiments leishmania forms which are always present. The authors think that it is rather the leishmania form of the parasite which gives rise to infections than the flagellate stage, just as it is the leishmania form which infects when inoculations are made directly from animal to animal. Accordingly, it is their view that the transmission of kala azar by sandflies is the result of leishmania forms of the parasite deposited on the skin when an infected insect is crushed there. In support of this view, which is not entirely original, reference is made to the numerous unsuccessful attempts

carried out to transmit by the bite of the sandfly. [The fact that a small number of successful transmissions by the bite of the sandfly have been effected in India seems to have escaped the authors' notice. Furthermore, mention is not made of the fact that if infected sandflies are allowed to feed through a membrane on a fluid, flagellate forms of leishmania not infrequently escape from the proboscis into the fluid and, what is important from the authors' point of view, that the fluid thus contaminated by the bite is infective, though all observations have failed to indicate the presence of leishmania forms in the fluid or in the probosces of infected flies. It is true that *L. donovani* during its development in the sandfly shows a greater tendency to spread forwards to the proboscis in the case of *P. perniciosus* in the Mediterranean region than in the case of *P. argentipes* in India, and that this has led ADLER and THEODOR [this *Bulletin*, 1931, Vol. 28, p. 639] to suggest that the disease in India, which occurs usually in adults, is caused by crushing, while in the Mediterranean region, where infants and dogs are most commonly infected, it is the bite which is responsible. It is claimed that infants and dogs are incapable of crushing sandflies on the skin, but it has to be remembered that in India infants are by no means immune, while in the Mediterranean region cases in adults are quite frequently met with. It is in India, however, that the infection has been successfully transmitted to hamsters by the bite, and there is no reason to suppose that a similar result could not be obtained with *P. perniciosus* in the Mediterranean region. Whether the bite alone is responsible for infection, or whether crushing of infected flies on the skin is an alternative or possibly the only method of transmission, future observations will have to show, but the suggestion by the authors that it is only leishmania forms and never the flagellate stages which infect is hardly in accord with evidence so far obtained and seems to be based on an incomplete review of the literature of the subject.]

C. M. W.

SUN (C. Jung) & WU (C. C.) **Notes on the Study of Kala-Azar Transmission. Part II. Further Observations on the Natural Infection of** *Phlebotomus chinensis* **with** *Leptomonas donovani.*—*Chinese Med. Jl.* 1937. Nov. Vol. 52. No. 5. pp. 665–673. With 2 figs. & 2 maps. [26 refs.]

It has been previously reported by the authors (this *Bulletin*, 1937, Vol. 34, p. 44) that they have found seven instances of natural infection with *Leishmania donovani* of *Phlebotomus chinensis* in a village in N. China. In the present paper further observations of a similar kind are recorded from two other villages in the same district. In one village (Yaowanghsiang) 10 out of 483 specimens of *P. chinensis* were found infected, while in the other (Liuchawa) 1 out of 54 was found infected. Flagellates were found in the mid-gut and at times in the hind-gut and in the proventriculus. In a footnote it is stated that *P. sergenti* var. *mongolensis*, the predominant species in the village of Liuchawa, was found naturally infected in one instance. It is considered that in view of its wide distribution in kala azar districts of North Kiangsu *P. chinensis* is the chief, if not the only, vector of kala azar in China. It is recorded that during the year 1936 infection was produced in 26 of 135 specimens of this sandfly which were fed on kala azar patients.

C. M. W.

WU (C. C.) & SUN (C. Jung). **Notes on the Study of Kala-Azar Transmission. Part III. Experimental Infection of Chinese Sandflies of the Erect-haired Division fed on Kala-Azar Patients and Infected Chinese Hamsters.**—*Chinese Med. Jl.* 1938. Mar. Supp. No. 2. pp. 579–591. With 2 figs. [10 refs.]

Working in N. China (Tsingkiangpu) the authors have infected laboratory-bred sandflies (*Phlebotomus chinensis, P. sergenti* var. *mongolensis* and *P. sp.*) by feeding them on cases of kala azar or experimentally infected hamsters. In the case of *P. chinensis* 19·26 per cent. became infected from human cases and 56·25 per cent. from hamsters. The corresponding figures for *P. sergenti* var. *mongolensis* were 1·17 and 32·68. Of *P. sp.* only one of 28 fed on a hamster became infected. The infections were well developed and reached a maximum on the fourth to the sixth day. There was a tendency for the flagellates to spread forwards from the mid-gut rather than backwards to the hind-gut. Those in *P. sergenti* var. *mongolensis* tended to die out when the blood was digested. The conclusions reached agree with those obtained previously by PATTON and HINDLE that the probable vector of kala azar in N. China is *P. chinensis.* *C. M. W.*

THEODOR (Oskar). **On African Sandflies.—III.**—*Bull. Entom. Res.* 1938. July. Vol. 29. Pt. 2. pp. 165–173. With 7 figs.

The paper deals with several collections of sandflies sent to the author for identification. With regard to one specimen, identified as *Phlebotomus langeroni*, Nitz, Dr. Theodor states :—

" This is the first record of a sandfly of the *major* group from a kala-azar area in the Anglo-Egyptian Sudan. One male only was found in a collection made by Sir Robert Archibald in El Fasher, Sudan (2.v.34). The occurrence of a sandfly of the *major* group, the members of which are so far as is known responsible for the transmission of kala-azar, was predicted by Adler & Theodor in 1931. It is not surprising that these sandflies are found so rarely. They are generally active only for a few hours at night and disappear very quickly after feeding, hiding in cracks, and only a meticulous search, particularly at night and with special knowledge of their habits, will generally reveal their presence.

" In 1936 Parrot described *P. langeroni* var. *orientalis* from Abyssinia. It cannot be decided whether our specimen belongs to this variety (although it is very likely), as this form was created mainly on the strength of a different distribution of the geniculated spines on the antennae, which are unfortunately lacking in our specimen."

RAYNAL (J.). Contribution à l'étude des phlebotomes de la Chine du Nord. [*Phlebotomus* **of North China.**]—*Arch. Inst. Pasteur d'Indochine.* 1937. Apr. Vol. 7. No. 25. pp. 37–99. With 10 plates, 30 figs. & 1 map. [70 refs.]

Four species of *Phlebotomus* are recognized in China north of the Yangtse. The greater part of this paper is occupied with detailed descriptions of the adult stages, and these are accompanied by drawings and excellent photographs of the distinguishing characters : pharyngeal and buccal armature, hypopygia, spermathecae. But there is also a review of their biology. The most widespread and important species is *P. chinensis*, which appears in May, is most abundant in June, and is becoming rare by August and September ; it hibernates as a larva.

This species has been found infected in nature with flagellates morphologically identical with the developmental forms of *Leishmania donovani*, it has been readily infected by feeding on infected hamsters and on human kala azar patients. Experimental transmission by the bite has not been achieved, but hamsters are easily infected by intraperitoneal inoculation of crushed infected insects.

V. B. Wigglesworth.

BERBERIAN (D. A.). **Successful Transmission of Cutaneous Leishmaniasis by the Bites of** *Stomoxys calcitrans.*—*Proc. Soc. Experim. Biol. & Med.* 1938. Mar. Vol. 38. No. 2. pp. 254–256.

The author, who had produced on himself an oriental sore by the intracutaneous inoculation of a culture of *Leishmania tropica*, attempted to transmit the infection through the agency of *Stomoxys calcitrans*, house flies and bed bugs. At various times seven *Stomoxys calcitrans* were allowed to feed on the sore and were then immediately transferred to an area of skin on the thigh of a volunteer. In all, the seven flies inflicted eleven bites on the volunteer. Five and six months after the bites two papules appeared on the area bitten and in the first leishmania were found. It would appear that *Stomoxys calcitrans*, which is attracted to sores and readily feeds on them, is capable of transmitting oriental sore mechanically and that it is possible that it may also transmit visceral leishmaniasis in the same manner.

C. M. W.

MALAMOS (Basilios). Versuche mit Leishmanien. IV. Versuche der Kala-Azar Übertragung durch Zecken (*Rhipicephalus sanguineus*). [**Experiments on the Transmission of Kala Azar by Ticks.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1938. Jan. Vol. 42. No. 1. pp. 22–23.

Experiments carried out by BLANC and CAMINOPETROS in Athens, whereby they infected spermophiles with leishmania by injecting emulsions of dog ticks (*Rhipicephalus sanguineus*) made at varying intervals after they had fed on experimentally infected animals, led them to conclude that this tick is the vector of human and canine kala azar in the Mediterranean district (this *Bulletin*, 1931, Vol. 28, p. 640). In the present paper the author records experiments he has made to transmit the infection from hamster to hamster by the bites of these ticks. The results have been entirely negative, thus supporting the view that the infections resulting from experiments of the kind made by BLANC and CAMINOPETROS merely indicate the capacity of leishmania to survive for varying periods in the gut of certain blood-sucking arthropods. *C. M. W.*

SINTON (J. A.). **The Successful Transmission of Cutaneous Leishmaniasis by Inoculation to Man from a Natural Lesion occurring on a Dog in India.**—*Indian Jl. Med. Res.* 1938. Jan. Vol. 25. No. 3. pp. 787–789.

Serosanguineous fluid containing leishmania from an ulcer on the nose of a dog living in the Punjab, India, was inoculated by cutaneous scarification into the skin of a European. Just over 12 months later

the first sign of an infection appeared at the inoculated area as a minute reddish spot. A small nodule developed and this ultimately broke down to form a small ulcer which healed after 20 months. Leishmania were found in the lesion up to 16 months. A volunteer inoculated from this lesion developed a papule after an incubation period of five months and in this again leishmania occurred.

C. M. W.

i. CIOTOLA (Enrique). El kala azar y la ontogenia del tripanosoma. [**Kala Azar and the Development of the Trypanosome.**]—*Rev. Méd. Peruana.* 1938. Mar. Vol. 10. No. 111. pp. 101–114. [14 refs.]

ii. ——. El kala azar y la ontogenia del tripanosoma. [**Kala Azar and the Development of the Trypanosome.**]—*Prensa Méd. Argentina.* 1938. May 4. Vol. 25. No. 18. pp. 874–882. With 3 figs. [14 refs.]

i. The author has made a diagnosis of kala azar in the case of three adults 35, 33 and 22 years of age and in a child 2 years and 10 months old in Peru, this being the first record of the disease in the country. Except in the case of the child the outstanding symptoms appear to have been the existence of patches of erythema or urticaria on the body. The diagnosis was based on the supposed presence of leishmania in the peripheral blood. It is stated that the parasites had the form of leishmania or herpetomonas and, in one case, of leptospira with a granule at the end, evolutionary forms which seem to indicate a development towards the trypanosome type. In no case was spleen or liver puncture carried out. The somewhat anomalous features of the disease and the remarks made about the parasites in the peripheral blood and the forms they assume throw doubt on the author's conclusions regarding the existence of kala azar in this part of S. America. It is evident that the presence of this disease in Peru cannot be accepted till more confirmatory evidence is forthcoming.

ii. The second paper is an illustrated edition of the first, but the microphotographs purporting to show leishmania or herpetomonad forms in the peripheral blood do not incline the reviewer to alter the opinions he has expressed above. *C. M. W.*

NICAUD (P.), LAUDAT (M.), BOLGERT (M.) & BRETON (P.). Kala-azar autochtone chez un adolescent. Diagnostic tardif par les ponctions splénique et sternale. Très grosse augmentation du taux des protéines sanguines, des globulines et de l'euglobuline. Longue persistance du syndrome humoral. [**A Case of Kala Azar in an Adult, showing Marked Increase in and Persistence of the Protein Content of the Serum.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1938. May 16. 54th Year. 3rd Ser. No. 16. pp. 770–777.

The case described is that of a young man, 18 years of age, who contracted kala azar in the South of France. The disease had run a course of over a year before a diagnosis was made by spleen puncture and the discovery of a heavy leishmania infection. The feature of the case to which special attention is called was the intensity of the various serological reactions which occur in this disease. Thus, the formol gel test resulted in a complete gelification of the serum within a few

seconds of the addition of one or two drops of formol. Associated with this the serum showed a very marked increase in the proteid content due to increase in both the globulin and euglobulin level. Treatment of the case by neostibosan resulted in rapid clinical improvement, but the blood condition three months after the commencement of treatment still showed the marked diminution in the albumin globulin ratio. During the course of the illness the patient suffered from recurring attacks of severe furunculosis, so much so that at one time a septicaemia was suspected. Similarly he was susceptible to various other infections such as influenza, angina, sinusitis and otitis. It was clear that the leishmania infection had taken a profound hold upon him and that in spite of the immediate response to antimony treatment this would have to be continued till there was evidence that the blood was returning to a normal condition. *C. M. W.*

PIÉRI (J.), SARDOU & BOUDOURESQUES. Réflexions à propos d'un cas de kala-azar autochtone de l'adulte. Traitement par les produits stibiés. Guérison. [**Autochthonous Kala Azar in an Adult.**]—*Bull. Soc. Path. Exot.* 1938. Feb. 9. Vol. 31. No. 2. pp. 95–100.

The case described is that of a man, 27 years of age, who contracted kala azar at Arles in the South of France. The results of various blood examinations and tests, which are given in detail, show that the case was a typical one of this disease. *C. M. W.*

POINSO (R.) & DE COUGNY. Un nouveau cas de kala-azar autochtone chez l'adulte (diagnostic sérologique ; guérison par le traitement stibié). [**Autochthonous Kala Azar in an Adult.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1938. Feb. 14. 54th Year. 3rd Ser. No. 5. pp. 239–244.

The detailed record of a case of kala azar in an adult, 43 years of age, from the south of France. *C. M. W.*

LEMIERRE (A.), LAPORTE (A.) & ISRAËL (R.). Sur un cas de kala-azar méditerranéen. [**A Case of Mediterranean Kala Azar.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1938. July 11. 54th Year. 3rd Ser. No. 24. pp. 1218–1226.

The case described is that of a man, 44 years of age, who came to Paris from Valencia in Spain where, it transpired subsequently, he had contracted kala azar. The disease, regarded for some time as malaria, was finally diagnosed by the discovery of leishmania in smears of the bone marrow, obtained by sternal puncture. A single dose, all that was then available, of ureastibamine was given and this was followed by a course of neostibosan, which failed to control the disease. A supply of ureastibamine having been obtained, this was administered and resulted in an immediate response. Later antimony intolerance developed and as another sternal puncture failed to reveal parasites, treatment was stopped. After about a month's failure to make headway a turn for the better suddenly occurred, the patient gradually returning to normal health. During the last four months it was noted that the various serological abnormalities engendered by the disease gradually disappeared, the last one being the high level of the euglobulin content of the serum. *C. M. W.*

MOLLOW (W.). Ueber einen autochthonen Fall von Kala-Azar in Bulgarien. [**An Autochthonous Case of Kala Azar in Bulgaria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1938. July. Vol. 42. No. 7. pp. 307–310.

The case described is that of a soldier, 26 years of age, who contracted kala azar in southern Bulgaria near the Grecian border. The diagnosis was made by the discovery of leishmania by liver and bone marrow puncture. Though it has been suspected for some years that kala azar occurs in Bulgaria, this is the first autochthonous case to be diagnosed by the discovery of the parasite. The author thinks that the disease will be found to exist on the Black Sea coast. Though a case of oriental sore was reported from Aitos by JURUKOFF, kala azar has not yet been identified there. *C. M. W.*

PICCINELLI (A.). Leishmaniosi viscerale latente in adulto rivelatasi nel corso di una infezione tifoidea. [**Latent Kala Azar in an Adult revealed in a Case of Typhoid Fever.**]—*Policlinico.* Sez. Prat. 1938. May 23. Vol. 45. No. 21. pp. 997–8, 1001–2, 1005. With 1 fig. [17 refs.]

The case described is that of a man 24 years of age who was admitted to an isolation hospital in Rome because of typhoid fever. This disease was diagnosed by blood culture and was treated by injection of typhoid vaccine. During the course of this treatment various blood examinations were made and on one occasion a blood film revealed several groups of leishmania. A diagnosis of kala azar was confirmed by spleen puncture. Specific treatment for this unsuspected disease was then instituted and the patient made an uninterrupted recovery. It is suggested that the rapid response to treatment is an indication of some kind of antagonism between the two diseases. [See also, as regards malaria and enteric fever, this *Bulletin*, 1920, Vol. 15, p. 252.]

C. M. W.

KIRK (R.). **Primary Cutaneous Sore in a Case of Kala-Azar.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. Aug. 25. Vol. 32. No. 2. pp. 271–272. With 2 figs. on 1 plate.

The case reported is that of a youth from the Blue Nile district of the Sudan who developed over the left malar region a slowly enlarging papule. The patient began to suffer from fever, and five months after the first appearance of the papule he was admitted to hospital and found to be suffering from visceral leishmaniasis. At the same time, leishmania were found in the skin lesion. The case is of interest as being one of cutaneous and visceral leishmaniasis in the same patient. Whether the sore was of the nature of a primary lesion leading later to a generalized infection with the same organism, or whether the two organisms of oriental sore and kala azar were present concurrently could not, of course, be determined. *C. M. W.*

DA CUNHA (A. M.). Sur l'agglutination des *Leishmania*. Agglutination flagellaire et agglutination somatique. [**Leishmania Agglutination—Flagellar and Somatic.**]—*C. R. Soc. Biol.* 1938. Vol. 128. No. 16. pp. 209–211. With 2 figs.

Agglutinating sera for leishmania were prepared by means of the culture flagellates either unheated or heated to 60°C. for half an hour.

Tested against a suspension of flagellates the serum prepared with unheated flagellates agglutinated in the form of flocculi which quickly sank in the tube, while that prepared with heated flagellates gave an agglutination in the form of granules which remained in suspension. In the first type the flagellates were found to have the flagella directed inwards while in the second the flagella were directed outwards. This indicates that there are in the leishmania both a thermostable flagellar antigen and a thermolabile somatic antigen. *C. M. W.*

GASPERINI (G. C.). Soppressione del fenomeno dell' "inversione della flocculazione" nei sieri filtrati di soggetti colpiti da leishmaniosi interna. [**Absence of the Phenomenon of "Inversion of Flocculation" in Filtered Sera of Kala Azar Subjects.**]—*Ann. d'Igiene.* 1937. Oct. Vol. 47. No. 10. pp. 505–506.

It has already been shown by a number of authors that the formol gel reaction of the serum of kala azar subjects is rendered less intense if the serum is subjected to ultrafiltration before the test is made. The present author shows that the reaction of CAMINOPETROS is also modified by filtration of the serum. This reaction is obtained by adding serum drop by drop to 2 cc. of a 1–4 per cent. solution of sulfarsenol. There is produced at once a turbidity which increases, as more drops are added, to an opacity and to flocculation. Finally a point is reached at which the flocculi dissolve and the fluid is again clear. This clearing, termed by CAMINOPETROS "inversion of flocculation," does not occur with filtered serum while, as in the case of the formol gel reaction, the primary turbidity and flocculation is less intense. It would appear that the molecules of proteid responsible for these reactions are not all of the same size. *C. M. W.*

GASPERINI (G. C.). Scomparsa della reazione di Henry nei sieri filtrati di soggetti colpiti da *Leishmania donovani*. [**Disappearance of the Reaction of Henry in Filtered Sera of Kala Azar Subjects.**]—*Ann. d'Igiene.* 1937. Oct. Vol. 47. No. 10. pp. 507–508.

The paper records the fact that the reaction of Henry, carried out with a solution of melanin prepared from the pigment of the cuttle fish, which has given the author good results with the serum of cases of malaria, no longer occurs with the sera of those cases of kala azar in which it is positive if the serum is subjected to ultrafiltration before the test is made. *C. M. W.*

PAI (H. C.) & HU (C. H.). **Absence of Leucolysin in Kala-Azar Serum.** —*Chinese Med. Jl.* 1938. Mar. Supp. No. 2. pp. 151–157.

The authors cannot agree with MAGGIORE and SINDONI that the reduction of the leucocytes in kala azar is due to the presence of leucolysin. Neither by direct observation of leucocytes in serum, nor by other means were they able to demonstrate the presence of such a substance. On the other hand they have found that in estimating the number of leucocytes there is a tendency for the polymorphonuclears to adhere to the surface of the glassware. This fallacy, which may be avoided to some extent by polishing the surface or coating it with paraffin, accounts for most of the apparent reduction in the number of leucocytes. *C. M. W.*

Hu (C. H.) & Pai (H. C.). **Further Study on the White Blood Cells of Hamsters experimentally infected with Kala-Azar with Description of Technic for observing Identical Cells in Supravitally and Ordinarily Stained Films.**—*Chinese Med. Jl.* 1938. Mar. Supp. No. 2. pp. 131–149. With 2 coloured plates. [14 refs.]

A study of the blood of hamsters suffering from experimental kala azar shows, apart from anaemia and leucopenia, a reduction in the percentage of the small lymphoid cells, due probably to an increased destruction of the older cells and hypertrophy of the smaller lymphoblasts to replace these. There is a definite increase in the percentage of large lymphoid cells and lymphoid cells with enlarged neutral red bodies. Clasmatocytes are present only in small numbers but there is an increase in the polymorphonuclear neutrophiles due to extra-medullary myelocytic proliferation in the spleen and elsewhere. This extra-medullary proliferation does not occur in man, and accounts for the difference between the neutrophile granulocytic response of human cases of kala azar and of experimentally infected hamsters.

C. M. W.

Giraud (Paul) & Gaubert. Les accidents de la ponction de rate. [**Dangers of Spleen Puncture.**]—*Arch. Méd. Gén. et Colon.* 1938. Vol. 7. No. 1. pp. 1–6.

In this paper the authors discuss the dangers of spleen puncture as practised for the diagnosis of kala azar. They have carried out the procedure in over 300 cases and on three occasions the operation has been the direct or indirect cause of death. In one case, a child six years of age, a small laceration 3 millimetres in length in the spleen capsule led to a half litre haemorrhage into the peritoneal cavity and death in three days. In the two other cases, one an infant of 11 months, seriously ill when first seen, and the other a child of two years with developing broncho-pneumonia, the operation merely precipitated an inevitably fatal issue, but the case of the older child was a tragedy. The authors conclude that all other methods of demonstrating parasites should be attempted before having recourse to spleen puncture, which must be carried out with the strictest precautions. These include careful immobilization of the patient, rest in bed for 24 hours after the operation, with application of ice to the abdomen and a fluid diet, and haemostatic medication, such as injection of horse serum and administration of calcium chloride by the mouth. If symptoms of haemorrhage supervene transfusion should be carried out. If these persist the advisability or otherwise of splenectomy should be considered. As regards purely empirical treatment the authors point out that the risk of spleen puncture is less than that of attempting to carry out antimony treatment, often a long and difficult procedure, without the confidence which is given by the discovery of the parasite and the knowledge thus attained that the case is indubitably one of kala azar. *C. M. W.*

Giraud (P.), Boudouresques, Blanc & Bergier. Le diagnostic du kala-azar par la ponction ganglionnaire à propos de deux nouvelles observations. [**Diagnosis of Kala Azar by Gland Puncture.**]—*Bull. Soc. Path. Exot.* 1937. Oct. 13. Vol. 30. No. 8. pp. 680–684.

In an earlier paper the authors drew attention to the diagnostic possibilities of puncture of lymphatic glands in kala azar. In the

present paper two cases are mentioned in which this procedure proved reliable as regards demonstration of leishmania and simple to carry out. In all, four cases in children have been easily diagnosed and the progress of treatment controlled by this little operation. The drawback is that in certain cases in children, and generally in adults, there is no enlargement of the glands, so that the method is not applicable in every case. *C. M. W.*

ANDERSON (C.) & DISDIER (C.). Contribution à l'étude de la méthode de Nattan-Larrier pour le diagnostic sérologique des leishmanioses. [**The Nattan-Larrier Method of Serological Diagnosis of Leishmania Infections.**]—*Arch. Inst. Pasteur de Tunis.* 1938. June. Vol. 27. No. 2. pp. 203–210.

In 1933, NATTAN-LARRIER and GRIMAUD-RICHARD (this *Bulletin*, 1934, Vol. 31, p. 230) described a serological test for the diagnosis of kala azar which depends upon the fixation of complement in the serum of a case of the disease when this is mixed with the serum of a rabbit which has been submitted to intravenous injections of cultures of leishmania. The authors have carried out the test in 79 cases of various kinds, including 9 cases of kala azar, and have found that it is not sufficiently specific for kala azar to be of value for diagnostic purposes. *C. M. W.*

D'OELSNITZ (M.). Diagnostic précoce et traitement d'attaque du kala-azar. Eléments de prophylaxie des leishmanioses viscérales. [**Early Diagnosis, Treatment and Prophylaxis of Kala Azar.**]—*Mouvement Sanitaire.* 1938. Apr. Vol. 15. No. 168. pp. 220–228.

The author, who has had an unrivalled experience of kala azar in the South of France, discusses in this paper the prophylaxis of the disease. He comes to the conclusion that, in view of the uncertainty as to the method of transmission, the only available methods of prevention are the early identification of cases and the treatment of these as rapidly as possible in order to render them incapable of handing on infection to others. The various diagnostic procedures are reviewed and the conclusion is reached that the most reliable indication of the early stage of infection is the discovery of the parasite by sternal puncture and the increased density of the serum under the influence of organic antimony compounds, as judged by photometric methods. The actual procedure adopted by the author is to add to a 1 in 1,000 dilution of serum a 1 in 100 solution of urea stibamine. A density of 0 to 4 for normal individuals is replaced by one of 8 to 30 for kala azar cases. As regards sternal puncture, this is now employed regularly on account of the occasional and inevitable accidents which follow spleen puncture even when every precaution is taken. For the treatment of the disease the best course to follow is to push the drug used to the limits of tolerance, the object being to eradicate the infection by a single course rather than by more than one. In this manner the danger of producing antimony resistant strains of parasite in the patient is avoided. As regards the actual drug, the author's experience is in favour of urea stibamine, which is stated to be no longer available in France. It is claimed that the tolerance to organic antimonials is considerably increased by the concurrent administration of injectable

liver extracts. The fall in the density of the serum antimony mixture as judged by photometry is the best test of the efficacy of the treatment adopted. *C. M. W.*

KIKUTH (Walter) & SCHMIDT (Hans). Solustibosan, ein Fortschritt der Kala-Azar-Behandlung auf Grund chemotherapeutischer Forschung. [**Solustibosan, an Advance in Kala Azar Treatment based on Chemotherapeutic Research.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1938. May. Vol. 42. No. 5. pp. 189–201. [22 refs.]

In this paper the authors show how it has been found possible to use leishmania-infected hamsters for testing kala azar remedies, and how by this means, the new drug solustibosan, which is in many ways superior to neostibosan, has been evolved. The whole technique is described in detail so that now for the first time there is available a method of standardization of preparations which may or may not be useful for the treatment of this disease. Solustibosan or 561 is a sterile isotonic neutral solution in water of a pentavalent antimony compound of such a concentration that 1 cc. contains 20 mgm. of antimony. Thus 6 cc. corresponds to a dose of 0·39 of neostibosan. The technique consists in infecting a series of European hamsters by the injection of an emulsion of the organs of an infected animal. The degree of infection is estimated by liver puncture performed six weeks after injection. In another six weeks' time the animals are as a rule in a suitable state of infection for testing drugs. These are administered subcutaneously once or twice a week or even more frequently for one or two weeks, the action being controlled by liver puncture and finally by examination of the organs post mortem for the presence or absence of parasites. The infection in untreated animals runs a very uniform course and shows little if any tendency to remissions. Even with very heavy infections there are no visible symptoms apart from the enlarged liver and spleen. Blood examinations, however, reveal certain changes in the cell content. When the animals die it is usually from some cause other than the actual leishmania infection.

This paper, which makes an important contribution to the technique of chemotherapeutic research, and an earlier one on the same subject (this *Bulletin*, 1938, Vol. 35, p. 182) must be studied in detail by all who are interested. *C. M. W.*

ERMEN (Johannes). Die Wirkung von 3– und 5wertigem Antimon auf das weisse Blutbild bei gesunden und mit Kala-azar infizierten Hamstern. [**The Influence of Tri- and Pentavalent Antimonials on the Leucocytes of the Blood in Healthy and Kala Azar Infected Hamsters.**]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1938. July 8. Vol. 93. No. 3/4. pp. 209–228. With 5 figs. & 7 charts. [22 refs.]

It has already been shown that the pentavalent antimony derivatives, such as neostibosan, are active agents for the treatment of kala azar both in man and in experimentally infected hamsters, while the trivalent compounds, like fouadin, are inactive. Working with hamsters, the author has investigated the blood changes which are brought about by the administration of these drugs with a view to correlating these with the differences in therapeutic action. Both in

healthy and in infected hamsters it was found that administration of neostibosan caused a marked histiocyte response, while fouadin failed to bring about more than the appearance in the blood of a few histiocytes. Fouadin, however, produced a marked monocytosis and leucocytosis. Neostibosan was responsible for some increase in the monocytes, and the leucocytes, which are below normal in infected animals, were brought to the normal level. It appears, therefore, that the activity of the pentavalent compounds is associated with a histiocyte response in the blood, and the author concludes that the success attending the use of these drugs in the treatment of kala azar is due to a double action—a direct one on the parasites and an indirect one upon the tissues. *C. M. W.*

WANG (C. W.) & LEE (C. U.). **Neostibosan and Experimental Kala-Azar in Chinese Hamsters. I. Normal Hamsters.**—*Proc. Soc. Experim. Biol. & Med.* 1938. June. Vol. 38. No. 5. pp. 670–674.
—— & ——. **Neostibosan and Experimental Kala-Azar in Chinese Hamsters. II. Infected Hamsters.**—*Ibid.* pp. 674–678.

Experiments made some years ago by SMYLY (1926) appeared to show that sodium antimony tartrate and other antimony compounds which were capable of curing human kala azar failed to influence the experimental disease in Chinese hamsters. HINDLE, working with JOHNSON, had similar results. ROEHL (1929), on the other hand, found that he was able to keep European hamsters free from infection by the use of a number of antimony derivatives, including neostibosan. More recently KIKUTH and SCHMIDT (*supra*) have had similar results with solustibosan, as well as with neostibosan. They have expressed the opinion that the failure of the early workers was due to the difference in the type of hamster used.

The authors of the present papers describe experiments which they have carried out with Chinese hamsters. These indicate that it is possible to administer to Chinese hamsters much larger doses than those employed by SMYLY and HINDLE. Thus, in the first paper it is shown that it would probably be safe to administer subcutaneously or intramuscularly twice a week to a hamster 0·4 gm. of neostibosan per kilo. of body weight. With dosage of this order given till a total of 7 gm. per kilo. of body weight had been reached it was possible to bring about a cure in 50 per cent. of these experimentally infected Chinese hamsters which survived the course of treatment. The most reliable test of cure was found to be the failure to contract infection by hamsters inoculated with liver and spleen emulsions of the treated animals. *C. M. W.*

CURASSON (G.), SISSOKO (B.) & LAURENCE. La leishmaniose canine à Dakar. [**Canine Leishmaniasis at Dakar.**]—*Bull. Soc. Path. Exot.* 1937. Oct. 13. Vol. 30. No. 8. pp. 684–686.

Canine visceral leishmaniasis was first recorded by LAFONT and HECKENROTH in Senegal in 1915. Since then HECKENROTH (1919), NOC and CURASSON (1920) and Marcel LEGER (1922) have noted other cases. In the present paper the authors state that they have examined 83 dogs of mixed breed in the *fourrière* at Dakar and have discovered 5 cases of visceral leishmania infection. All the animals were positive as regards serological tests, the diagnosis being confirmed

by the discovery of leishmania by examination of the spleen and bone marrow. Of the five animals, four were in poor condition, while one appeared to be in good health. *C. M. W.*

DONATIEN (A.) & LESTOQUARD (F.). Remarques sur l'évolution de la leishmaniose générale du chien. [**Evolution of Generalized Leishmaniasis of the Dog.**]—*Bull. Soc. Path. Exot.* 1938. Mar. 9. Vol. 31. No. 3. Also in *Arch. Inst. Pasteur d'Algérie.* 1938. June. Vol. 16. No. 2. pp. 191–202.

The authors have kept under observation in Algiers for a long period a number of dogs which were found to have a natural leishmania infection, with a view to obtaining a correct idea of the natural course of canine kala azar. It was evident that after infection a dog might show no symptoms whatever for a silent period of weeks or months. The length of this period had no relation to the intensity of infection, which was very heavy in certain dogs showing no symptoms. It seemed to depend rather on the degree of reticulo-endothelial response. When symptoms appeared the disease in some cases progressed steadily till the animal died, but in others there would be a rebate of symptoms followed by a second silent period. Under natural conditions exposure to reinfection was constant and far from there being any immunity a reinfection was sometimes followed by an exacerbation of the symptoms. It was evident that many dogs must be infected without showing any symptoms and that on this account it was impossible to carry out any prophylactic measures which were based on the detection of infected animals without examining every dog in a district. *C. M. W.*

DONATIEN (A.) & LESTOQUARD (F.). Observation d'un cas de leishmaniose générale du chien accompagnée de néoplasie. [**Generalized Leishmaniasis of the Dog accompanied by Neoplasms.**]—*Bull. Soc. Path. Exot.* 1938. Mar. 9. Vol. 31. No. 3. pp. 217–220. Also in *Arch. Inst. Pasteur d'Algérie.* 1938. June. Vol. 16. No. 2. pp. 203–209.

During the course of treatment of a dog for visceral leishmaniasis which had been contracted in Algeria the animal developed a number of malignant tumours, many of which were visible on the skin. A particular feature of this case was the intensity of the leishmania infection and a marked enlargement of the lymphatic glands. The animal was destroyed and it was found that all the organs including the neoplasms, which showed the characters of reticulo-endothelioma, were very heavily infected with parasites. *C. M. W.*

PIGOURY (L.). Reviviscence de lésions cutanées ou ecthyma stibié au cours du traitement de la leishmaniose canine par les antimoniaux. [**The Effect of Antimony Treatment of Canine Kala Azar in causing Outbreaks of Skin Lesions or the Aggravation of those already existing.**]—*C. R. Soc. Biol.* 1938. Vol. 127. No. 2. pp. 105–108.

The author has noted that during the treatment of dogs for kala azar by the injection of antimonials skin lesions, in the form of pustules which break down and form ulcers, are likely to appear on various parts of the body. These are of a temporary nature and heal in a few days.

They are regarded as an indication of the toxicity of the drug to which the animals quickly adapt themselves. The author has noted that parasites occur in the tissues of these ulcers. He regards these as concentrations of parasites brought about by the inflammatory reaction of the skin lesions. He does not consider the lesions as related in any way to the concentrations of parasites which are known to occur in the skin of dogs suffering from visceral leishmaniasis.

C. M. W.

KHAW (O. K.). *Myospalax fontanieri* **Milne-Edwards and** *Citellus dauricus mongolicus* **Milne-Edwards. Two New Laboratory Animals for Experimental Kala-Azar.**—*Chinese Med. Jl.* 1938. Mar. Supp. No. 2. pp. 593–600. With 12 figs. on 6 plates. [13 refs.]

The author records experiments with the mole rat (*Myospalax fontanieri*) and the ground squirrel (*Citellus dauricus mongolicus*), both of N. China, which show that they are susceptible to *Leishmania donovani* infections. The former is as easily infected as the hamster, the latter less so. The mole rat, moreover, has certain advantages over the hamster in that it is as large as the guineapig. *C. M. W.*

CHAGAS (E.), DA CUNHA (A. Marques), CASTRO (G. de Oliveira), FERREIRA (L. Castro) & ROMAÑA (C.). Leishmaniose visceral americana. (Nova entidade morbida do homem na America do Sul). Relatorio dos trabalhos realisados pela commissão encarregada do estudo da leishmaniose visceral americana em 1936. [**South American Kala Azar.**]—*Mem. Inst. Oswaldo Cruz.* 1937. Vol. 32. No. 3. pp. 321–390. With 82 half tone illustrations, 9 diagrams & 2 folding maps on 45 plates.

In this long illustrated report the authors review the present knowledge on the subject of kala azar in S. America. The existence of this disease there had been suspected for many years, particularly by Carlos CHAGAS (1911–1912), who considered that certain cases of unexplained splenomegaly were probably due to visceral leishmania infections though he had not been able to discover the parasite. In 1913 MIGONE (this *Bulletin*, 1913, Vol. 1, p. 635) announced the discovery of a fatal case of kala azar in Asuncion, the capital of Paraguay. The infection in this case appears to have occurred in Matto Grosso, Brazil. MAZZA and ARIAS in 1926 (this *Bulletin*, 1927, Vol. 24, p. 135) reported two cases in children in the Argentine in the province of Salta. Eight years later, in 1934, INDA, VÍVOLI and VACCAREZZA (this *Bulletin*, 1934, Vol. 31, p. 659) gave an account of the pathological findings in a fatal case in an adult, also from Salta. More recently ROMANA (1936) has recorded nine cases from the Chaco district of the Argentine. In 1934 PENNA (this *Bulletin*, 1935, Vol. 32, p. 481) announced the discovery of leishmania in a number of the liver specimens which had been removed by viscerotomy from fatal cases of undiagnosed fevers and which had been examined histologically for evidence of yellow fever. In a series of 47,000 specimens leishmania were found in 41. It was evident, therefore, that kala azar existed in Brazil and accordingly a commission was set up to investigate the distribution and characters of the disease in Brazil and the Argentine. A great deal of information has been collected

and this is all described and recorded in the present report. As far as can be judged at present the disease in S. America differs very little, if at all, from kala azar of the Old World, while the study of the organism does not reveal any fundamental differences from *Leishmania donovani*. By means of serological tests with immune sera prepared by inoculating cultures into animals it is claimed that the S. American parasite can be differentiated from other species of *Leishmania* and on this account the name *Leishmania chagasi* has been given it. It would appear, however, that the differences noted are not greater than those which have been observed to exist between different races of a single species. Furthermore, the failure of animals to become infected when inoculated, which has been adduced as an argument in favour of the distinct species, loses its value in view of the recent successful infection of animals by DA CUNHA and ADLER. The S. American disease is said to be endemic in character, in contrast to kala azar of the Old World which is said to be epidemic, but this is not a correct view of the situation, for in the Old World the disease is rarely epidemic and then only at intervals. In most cases it is endemic, the cases occurring often quite sporadically. The differences between the two diseases, muco-cutaneous leishmaniasis of S. America and oriental sore of the Old World, are much more pronounced than any supposed differences between the corresponding forms of the visceral disease. On this account there is more justification for the recognition of *Leishmania braziliensis* as distinct from *Leishmania tropica* than for admitting the species *Leishmania chagasi* as different from *Leishmania donovani*.

As regards the distribution of the disease the viscerotomy service had shown a fairly general distribution in N.E. Brazil from Pará to Bahia with concentrations in N.E. Pará, Ceará, Sergipe and Bahia. Actual cases were discovered by the commission in the same regions. Other cases also were brought to light in the Chaco district of the Argentine.

The paper gives a full account of the fauna and flora of the districts studied, describes and illustrates the types of country, towns and habitation in which cases of the disease were found, gives an account of the meteorological conditions which prevail and generally lays the foundations of future work on the epidemiology of this most interesting disease. *C. M. W.*

i. DE OLIVEIRA (Ary Coelho). Um caso de leishmaniose visceral americana. [**A Case of American Kala Azar.**]—*Hospital.* Rio de Janeiro. 1938. Mar. Vol. 13. No. 3. pp. 465–470. With 3 figs.

ii. CHAGAS (E.) & CHAGAS (A. W.). Notas sobre a epidemiologia da leishmaniose visceral americana em Mato Grosso. [**Epidemiology of American Kala Azar in the Matto Grosso.**]—*Ibid.* pp. 471–480. With 6 figs. (1 map).

i. The first paper is a record of a typical case of kala azar in a boy of 9 years of age from the Coxim municipality of the Matto Grosso district of Brazil. The case was an isolated one in a forest region, an illustration of the sporadic character of the disease in S. America. Leishmania were found by puncture in the spleen and liver and also in an excised lymphatic gland. Treatment with fouadin and neostibosan proved satisfactory.

ii. The second paper is a detailed epidemiological study of the case, which occurred in an isolated thatched hut in a wooded and bush covered district. The various blood-sucking insects encountered, including an unidentified species of *Phlebotomus*, are described, as also the various animals, domestic and wild, which were likely to come in contact with the patient. The topographical features of the country are shown in a number of illustrations. *C. M. W.*

DEANE (L.). Leishmaniose visceral neotropica. [**Neotropical Kala Azar.**]—*Hospital.* Rio de Janeiro. 1938. Feb. Vol. 13. No. 2. pp. 315–321.

This is a general account of kala azar based on cases seen in the N.E. region of Brazil, where the disease has been shown to be endemic. Clinically it resembles the Indian or Mediterranean forms of the disease and as regards symptomatology, diagnosis and treatment there does not appear to be any marked difference from the disease long known in the Old World. *C. M. W.*

DA CUNHA (Aristides Marques). Infecções experimentaes na leishmaniose visceral americana. [**Experimental Infections with S. American Kala Azar.**]—*Brasil-Medico.* 1938. June 18. Vol. 52. No. 25. p. 571.

ADLER (S.). **Smear of Spleen of Syrian Hamster showing the Parasite (the So-called *Leishmania chagasi*) of South American Kala-Azar.** [Laboratory Meeting Demonstration.]—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. June 25. Vol. 32. No. 1. p. 4.

In the first of these papers the author announces the successful infection with the leishmania of S. American kala azar of the hamster, the rhesus monkey and the dog. The author of the second paper makes a similar announcement regarding the Syrian hamster, which was infected by cultures of leishmania sent from S. America.

The importance of these results lies in the fact that the insusceptibility of laboratory animals was considered to be one of the features distinguishing the S. American parasite from *Leishmania donovani* of the Old World. *C. M. W.*

DA CUNHA (A. M.). Sur les infections expérimentales de leishmaniose tégumentaire américaine. [**Experimental Infections with American Cutaneous Leishmaniasis.**]—*C. R. Soc. Biol.* 1938. Vol. 128. No. 16. pp. 211–213. With 1 fig.

With cultures of the parasite of S. American cutaneous leishmaniasis a number of animals were inoculated. A rhesus monkey and a dog developed cutaneous nodules in which leishmania occurred. With cultures of the parasite of the local visceral leishmaniasis a similar nodule was produced on the skin of a rhesus monkey. Thus inoculated into the skin the parasites of both cutaneous and visceral leishmaniasis have given rise to local lesions. *C. M. W.*

HOARE (Cecil A.). **Early Discoveries regarding the Parasite of Oriental Sore. (With an English Translation of the Memoir by P. F. Borovsky : " On Sart Sore," 1898.)**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. June 25. Vol. 32. No. 1. pp. 67–92. With 3 plates. [43 refs.]

The author's purpose in publishing this paper is to call attention to the observations made by two Russian medical men on oriental sore and to give them proper credit for their discoveries and suggestions. The first of these is P. F. BOROVSKY, a military surgeon stationed at Tashkent, who in 1898 published in the Military Medical Journal, which is almost inaccessible to readers outside Russia, an account of his studies. The author has translated this paper and the literal translation produced here makes the paper available for the first time to those who are not conversant with the Russian language. It gives an accurate description of the disease, its clinical features and pathology, but of special interest is the account of the causative agent, which is described as a small body containing a nucleus and a process running from the nucleus to the periphery of the parasite. It is possible to recognize in this description the leishmania as we know it to-day, but certain statements are difficult to explain and may in part be due to imperfect fixation of some of the material used for the observations. Thus, all that may be visible is the nucleus of the parasite, giving the appearance of a coccus, as indeed was recognized by BOROVSKY, or with the nucleus the kinetonucleus may appear as a rod projecting from the nucleus, producing the impression of a process, possibly a flagellar process, arising from a rounded coccus-like body. In both these cases the cytoplasm of the parasite, being badly fixed, is not visible. These appearances may account for some of the discrepancies in the description, but beyond this a clear picture of the entire leishmania is given. Furthermore, impressed with the structure of the parasite and its general appearance, the author referred the parasite to the class protozoa. To BOROVSKY, then, is due the credit of first describing accurately the parasite of oriental sore and of recognizing it as a protozoon. The parasites had been previously seen by CUNNINGHAM in India in 1885 but he had been so much impressed with their presence in large numbers in cells which we now know as macrophages that he had concluded that the large macrophages were mycetozoa and the small bodies, subsequently named leishmania, within them, were spores of this mycetozoon. FIRTH again, in 1891, made similar observations and accepted CUNNINGHAM's conclusions. Finally, in 1903, WRIGHT, in ignorance of BOROVSKY's work and of LEISHMAN's account of the parasite of kala azar, gave an accurate description of the parasite of oriental sore.

The study of the literature of the early discoveries necessitated a review of the nomenclature of the parasite of oriental sore and kala azar and in this paper the author has given a complete account of the various terms and names employed and the numerous synonyms of *Leishmania tropica* and *Leishmania donovani*.

Another paper referred to is one by SHULGIN, who was a colleague of BOROVSKY at the Tashkent Military Hospital. He also turned his attention to oriental sore and by a series of ingenious arguments arrived at the conclusion that oriental sore was the result of the bite of some nocturnal insect which was an intermediate host, in the same way as an intermediate host is recognized for malaria. It thus comes

about that the two Russian observers referred to were the first to recognize the parasite of oriental sore, to give an accurate description of its structure, to realize its protozoal nature and to suggest its transmission by a blood sucking intermediate host.

The paper contains a sketch of the life of BOROVSKY (Appendix 1), a photograph of him and reproduction from his paper of illustrations of sections of oriental sore and of the parasite described. *C. M. W.*

KIRK (R.) & DREW (C. B.). **Preliminary Notes on Dermal Leishmaniasis in the Anglo-Egyptian Sudan.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. Aug. 25. Vol. 32. No. 2. pp. 265–270. With 9 figs. on 4 plates & 1 sketch map. [19 refs.]

It is noted that in the Sudan, cases of cutaneous leishmaniasis fall into two groups. In the one the skin lesions appeared in cases of kala azar after treatment and resembled the post-kala azar dermal leishmaniasis of India. In the other group of cases there is no previous history of kala azar and the lesions resemble oriental sore. This disease does not occur with any frequency elsewhere than in Darfur, where cases of muco-cutaneous leishmaniasis or espundia and kala azar have also been reported. Cases of espundia have previously been noted in Sennan, the home of kala azar in the Sudan, while in the present paper the first case of typical oriental sore is reported from this district. It thus appears that in the Sudan there is no clear separation of visceral cutaneous leishmaniasis like that observed in India and some other regions. The paper is illustrated by a number of photographs showing the character of the skin lesions met with.

C. M. W.

MONTI (Giuseppe). Bottone d'Oriente in un militare nazionale.—[**Oriental Sore in an Italian Soldier.**]—*Arch. Ital. Sci. Med. Colon. e Parassit.* 1937. Oct. Vol. 18. No. 10. pp. 636–637. With 1 fig.

Cases of oriental sore amongst the indigenous population of Agamé, Abyssinia, have already been reported by POGGI (this *Bulletin*, 1938, Vol. 35, p. 183). The present paper describes the case of an Italian soldier who contracted the disease, in the form of a lesion on the nose, in the same district. *C. M. W.*

VIGNE (P.) & DUSAN (J.). Double bouton d'Orient du visage. [**Double Oriental Sore on the Face.**]—*Marseille-Méd.* 1937. Sept. 5–15. Vol. 74. No. 25–26. pp. 202–204. With 1 fig.

The case described is that of a man 45 years of age who contracted oriental sore on both cheeks about four months after returning to Marseilles from a visit to Crete. *C. M. W.*

HERVÉ. Note sur la leishmaniose cutanée au Cameroun. [**Cutaneous Leishmaniasis in the Cameroons.**]—*Ann. de Méd. et de Pharm. Colon.* 1937. July–Aug.–Sept. Vol. 35. No. 3. pp. 928–934. With 6 figs.

In this note the author states that as long ago as 1930 or 1932 he suspected oriental sore in the case of certain nodular, ulcerative or eczematous lesions he had met with in the Cameroons. All cases were

in individuals coming from the south of the territory. At that time it was not possible to discover leishmania in any of the lesions. In 1935 and 1936 he has again seen a number of cases from the south, over 20, and has been able to confirm his original diagnosis by the discovery of the parasites. A careful examination by spleen puncture of cases of splenomegaly has failed to reveal any instance of visceral infection.

C. M. W.

PAONI (A.). Osservazioni colturali con rilievi epidemiologici sulla leishmaniosi cutanea e viscerale in Sardegna. [**Observations on the Epidemiology of Leishmania Infections in Sardinia and the Culture of the Parasite.**]—*Giorn. di Batteriol. e Immunol.* 1938. June. Vol. 20. No. 6. pp. 1159–1172. [10 refs.] English summary (7 lines).

Employing N.N.N. medium, a medium composed of alkaline goat's or cow's milk and an N.N.N. medium in which milk was used in the place of blood, cultures of leishmania were obtained from a case of oriental sore and one of kala azar seen by the author in Sardinia. The method of spread of the two diseases in the island is discussed in the light of the various blood sucking arthropods which occur there, without, however, arriving at any definite conclusion. *C. M. W.*

EVANS (R. Byron). **Cutaneous and Subcutaneous Leishmaniasis.**—Reprinted from *Brit. Jl. Dermat. & Syph.* 1938. Jan. Vol. 50. pp. 17–22. With 2 figs. [10 refs.]

The case described is that of a man who developed a number of ulcers associated with surrounding subcutaneous nodules on the arm, neck and legs after residence in Iraq. In many respects the arm lesions resembled in character and distribution tuberculides of the hypoderm and Bazin's disease with involvement of the skin. A diagnosis of oriental sore was established by discovery of leishmania in the lesions. *C. M. W.*

PANJA (Ganapati). **An Unusual Case of Dermal Leishmaniasis of the Tongue.**—*Jl. Indian Med. Assoc.* 1938. Mar. Vol. 7. No. 6. pp. 368–369. With 1 fig.

The case described is that of a Hindoo who suffered from dermal leishmaniasis for eight years following treatment of kala azar with urea stibamine. There was patchy depigmentation of the skin and numerous lesions occurred in various parts of the body. Finally, there developed on the dorsum of the tongue nodular lesions in which leishmania were demonstrated. Though lesions on the mucous membrane of the palate, lips and cheek have been described in this condition, this appears to be the first notification of lesions on the tongue. For treatment of post-kala azar dermal leishmaniasis the author advocates the concurrent use of pentavalent arsenic and antimony compounds. He claims that the combined action of the two drugs brings about a more rapid response than the use of the antimony derivatives alone. *C. M. W.*

BRUMPT (Lucien). Coexistence d'une sténose oesophagienne et de boutons d'Orient guéris simultanément après traitement stibié. [**Simultaneous Cure of Eosophageal Stricture and Oriental Sores with Urea Stibamine.**]—*Bull. Soc. Path. Exot.* 1938. May 11. Vol. 31. No. 5. pp. 366–369.

The case described is a remarkable one of a man who, having oriental sore in the shape of a lesion on a finger and another on the dorsum of the foot, suddenly found difficulty in swallowing, a condition which developed to an extreme degree. Examination revealed a complete organic blockage of the oesophagus at the junction of the middle and lower thirds. This was regarded as of a malignant nature. Gastrostomy was performed and the patient sent to Paris for radium treatment. No improvement occurred, when the suggestion was made that there might be some connexion between the hitherto neglected oriental sores and the stricture in the oesophagus which had already persisted for six months. The two sores were found to contain numerous leishmania and it was desired to examine the oesophagus for these parasites. The patient refused any further oesophageal examination. Treatment by injections of urea stibamine was instituted. This produced an inflammatory reaction in the sores which afterwards commenced to heal. Ten days after the commencement of treatment the patient was able to swallow a little water and at the end of the month could eat a meal at a restaurant. About three weeks later the two sores had completely healed. The paper discusses the possibility of the oesophageal condition being one of the rare instances of involvement of a mucous membrane in oriental sore of the Old World. It is unfortunate that it was not possible to examine the oesophageal lesion for leishmania. *C. M. W.*

MANSON-BAHR (Philip). **Oriental Sore (Dermal Leishmaniasis), a New Method of Treatment with a Note on its Lymphatic Dissemination.**—Reprinted from *Festschrift Bernhard Nocht z. 80. Geburtstag von seinen Freunden u. Schülern. Hamburg.* 1937. pp. 278–282. With 4 figs. on 1 plate.

After considerable experience in the treatment of oriental sore by many of the well recognized methods the author expresses himself in the present paper as being unsatisfied with any of these. He has, however, found that good results follow the use of cignolin, which is a refined product of chrysophanic acid. It had been introduced for the treatment of psoriasis and fungus skin diseases. There are two preparations of this, a paint and an ointment. The paint is a mixture of cignolin, grams 4, ichthyol, grams 8 and oleum cadini, minims 40, to which is added benzoli rect. to bring the mixture to 1 ounce. The paint is applied daily to the whole area of the sore, but not to the surrounding skin, by means of a camel's-hair brush after the sore has been thoroughly cleaned. For more chronic types of sore the ointment is used. This consists of cignolin grams 4, zinc oxide half an ounce and olive oil half an ounce. By means of a number of descriptive cases the good results of this treatment are demonstrated. Attention is drawn to the enlargement of the lymph nodes situated in the drainage area of the sore. These were particularly noticeable in one of the cases but it was not possible to demonstrate leishmania in them.

C. M. W.

KRASNIANSKI (M.). Traitement de la leishmaniose cutanée par les préparations de l'or. [**Treatment of Oriental Sore with Gold Preparations.**]—*Med. Parasit & Parasitic Dis.* Moscow. 1936. Vol. 5. No. 5. [In Russian pp. 779–784. French summary p. 784.]

This paper appears to be a Russian version of the German paper already reviewed [this *Bulletin*, 1937, Vol. 34, p. 50]. *C. M. W.*

LAVROV (A. P.) & DUBOVSKOY (P. A.) **On Prophylactic Vaccination against Dermal Leishmaniasis.**—*Med. Parasit. & Parasitic Dis.* Moscow. 1938. Vol. 7. No. 2. [In Russian pp. 228–232. English summary p. 233.]

A German version of what appears to be the same paper has already been reviewed (this *Bulletin*, 1937, Vol. 34, p. 578). *C. M. W.*

LEPROSY.

BALIÑA (Pedro L.) & BASOMBRÍO (G.) Constatations et données sur la lèpre en Argentine d'après notre observation personelle. [**Leprosy in Argentina.**]—*Rev. Brasileira Leprologia.* S. Paulo. 1938. June. Vol. 6. No. 2. pp. 91–111.

This is a valuable account of the incidence of leprosy in Argentina. An analysis of 862 cases observed by the authors in sixteen years showed the first symptoms to be cutaneous in three-fourths. Males formed 56·92 per cent. 15·84 per cent. were imported cases. The age incidence was unusually high, with only 11·03 per cent. up to 20 years. 26·63 per cent. 20 to 30 years and 11·36 per cent. over 60 years of age. In the coastal areas 83·59 per cent. occurred among 67·49 per cent. of the population, and in the very dry Andes area only 0·82 per cent. among 8·31 per cent. of the people, and the authors point out that these data support the theory of ROGERS of the favouring influence of humidity. High intensity of population also favours the disease. Conjugal infections were rare, and only bacillary positive cutaneous cases were thus communicated. The examination of contacts revealed 41 cases. The evolution of 236 cases was watched for some years, and aggravation was noted in 18·64 per cent., a stationary condition in 16·10 per cent., improvement in 41·48 per cent., and clinical and bacteriological cure in 23·72 per cent., all in tuberculoid, and nervous or maculo-anaesthetic cases. The authors advise search for ambulatory cases, treatment of mild, and internment of advanced contagious ones. *L. Rogers.*

VAN BREUSEGHEM (R.). La lèpre chez les pygmées. [**Leprosy in Pygmies.**]—*Ann. Soc. Belge de Méd. Trop.* 1938. Mar. 31. Vol. 18. No. 1. pp. 135–137.

This is a brief note on leprosy among the pygmies of the Belgian Congo. The incidence was at the high rate of 6 to 9 per cent. Clinically the cases were macular, except for one nodular and one mutilated case. *L. R.*

MOISER (B.). **Leprosy in Southern Rhodesia. Report of Ngomahuru Leprosy Hospital for 1937.**—*Leprosy Review.* 1938. July. Vol. 9. No. 3. pp. 110–113.

This is the 1937 report of the Ngomahuru Leprosy Hospital and includes the data of three other Rhodesian institutions, with 1,066 cases. Moogrol has been mainly relied on ; out of 581 cases 25 died, 42 became worse, 53 remained stationary, 363 improved and 98 were arrested and discharged, so that approximately 80 per cent. benefited from the treatment. Voluntary admissions continue to increase. The national institution in the native reserves of beer drinks are believed to be the main factor in spreading infections, so leprosy patients should be excluded from them. The main colony with 8,400 acres and a good climate is considered suitable for the treatment of European patients, if housing can be supplied. *L. R.*

LAMBIE (C. G.). **The History of Leprosy.**—*Med. Jl. Australia.* 1938. June 4. 25th Year. Vol. 1. No. 23. pp. 947–962. With 8 figs. [42 refs.]

This is a lengthy historical account of leprosy up to the middle ages. The decline in Europe since that period is discussed, and dietetic factors are considered to have played an important part. *L. R.*

DAVEY (T. F.) **Leprosy in South Eastern Nigeria. Report on a Survey at Etiti Ama, Nkporo, Bende Division, Owerri Province.**—*Leprosy Review.* 1938. July. Vol. 9. No. 3. pp. 113–122.

This is a report on a leprosy survey of the Etiti Ama village in Nigeria.

For ten years the people have adopted a system of segregating lepers in special villages about half a mile from neighbouring ones, surrounded by a wall with a single entrance. The diet is mainly vegetarian. A survey has been made by the staff of the Uzuakoli leper colony, during which everyone in the leper village was examined clinically and bacteriologically. The most interesting features were that of the population of the Etiti Ama village ; females outnumbered males, and infants were very numerous. In spite of segregation 65 cases of leprosy, or 3·7 per cent., remained in the village, and 41 more were in the leper village, making a total of 6 per cent. Males numbered 37 and females 69, which is said to be characteristic of S. Nigeria. Adults suffered most, and the village cases were mostly mild, but the leper colony cases were mainly advanced cutaneous ones. *L. R.*

OBERDÖRFFER (Manfred). Untersuchungen ueber den Leprafall in Südost-Nigeria. [**Leprosy in S.E. Nigeria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1938. July. Vol. 42. No. 7. pp. 310–321. With 2 figs.

This paper also deals with the distribution of leprosy in S.E. Nigeria. The author has made surveys and found from 3 to 5 per cent. of the population to be infected. Mutilated cases formed 17 per cent., generalized infections of a severe type 30 per cent. and resistant cases 44 per cent. Few children and comparatively few women, 33 per cent., were affected. *L. R.*

OBERDÖRFFER (Manfred). Untersuchungen ueber die prädisponierenden Faktoren der Lepra in Süd-Nigeria. [**Predisposing Factors of Leprosy in Nigeria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1938. Aug. Vol. 42. No. 8. pp. 367–372. With 1 fig. [13 refs.]

In this paper the author compares the monthly incidence of activity in leprosy cases with the dietary and climatic conditions. He finds most activity in November to March, when the rainfall and diurnal variations in temperature are lowest, and the opposite conditions in April to October, with the exception of August. He associates the high rates with the consumption of coco-yams (*Collocasia antiquorum*), due, he thinks, to toxic substances they contain. *L. R.*

INNES (J. Ross). **Leprosy Survey in the British Solomon Islands, Western Pacific. A Summarised Account of the Work and Results.**—*Leprosy Review.* 1938. July. Vol. 9. No. 3. pp. 122–128. With 1 map.

This is a report of a systematic survey in the British Solomon Islands, Pacific Ocean, in which nearly a quarter of the 94,000 people

were examined. The number of leprosy cases found was 221, or 1·02 per cent., and the total was computed at 900. The incidence was heavier in the bush than in the coast areas, and the distribution that of a small group or family disease, and heaviest among the more primitive people. The neural type predominated. The diet is deficient. Malaria and yaws are prevalent and predispose to leprosy. *L. R.*

PARMAKSON (P.). **Statistic Reports on Leprosy in Estonia.**—*Internat. Jl. Leprosy.* Manila. 1938. Apr.–June. Vol. 6. No. 2. pp. 185–198. [18 refs.]

This is a statistical report on leprosy in the Baltic province of Estonia. It is best summarized in the author's own words :—

"We have brought forward data concerning the history and present status of the leprosy campaign in Estonia, and have given the total number of patients.

"Cutaneous leprosy is more frequent than neural leprosy, the proportion of which has decreased during the last thirty-five years. This decrease has not been in all territorial areas ; where the cases originate from large old foci, the proportion of the neural type has been increasing, whereas it has been decreasing when they arise from small new foci or occur accidentally. Only a few cases of tuberculoid leprosy are known.

"Leprosy has been much more common among women in Estonia than among men. During recent decades the proportion of female patients has been increasing continually. Together with this prevalence of the disease among females, we can see a marked decline in total incidence. We have no explanation for this sex incidence, which is quite the reverse of that of other countries.

"The time of onset of the disease has been investigated on 455 cases of the Kuuda leprosarium. It has occurred in all ages, the highest frequency being in the 30–39 year group. For comparison there are given data from Saaremaa, where the disease begins at an earlier age. This earlier onset can be attributed to the fact that most cases in Saaremaa come from a limited and severely infected focus. It seems that age is not a decisive factor in the susceptibility to leprosy.

"The patients have been isolated, on the average, 8·8 years after the onset of the disease.

"The average duration of the disease has been 15 years in 284 cases in which the time of death has been determined.

"Of the cases of death, only 48·6 per cent. can be attributed to leprosy.

"Of 455 patients, 19·3 per cent. recovered under treatment ; 11·4 per cent. of the latter have shown a relapse. In 80 per cent. of these cases the relapse occurred more than five years after leaving the settlement.

"Much attention has been paid to general treatment, and all of the more important antileprosy remedies of recent decades have been tried."

L. R.

LOWE (J.). **Preliminary Report of an Epidemiological Survey of Leprosy in a Typical Rural Area of West Bengal.**—*Leprosy in India.* 1938. Apr. Vol. 10. No. 2. pp. 41–49.

A preliminary report on an epidemiological survey of 42 Bengal villages with a population of 10,000. The incidence of definite cases was 4·38 per cent., of which 82 per cent. were neural and 18 per cent. cutaneous in type. The age of onset indicated most infections early in life, and males showed twice the incidence of females, and it was of a more severe type in the former. In over 80 per cent. there was a definite history of contact, mostly with open cutaneous cases, one-third

were infected by near and another third by distant relatives; the latter due to the joint family system. The cases were more severe if contracted at an early age and through house contact. *L. R.*

AYCOCK (W. Lloyd) & McKINLEY (Earl B.). **The Roles of Familial Susceptibility and Contagion in the Epidemiology of Leprosy.**—*Internat. Jl. Leprosy.* Manila. 1938. Apr.–June. Vol. 6. No. 2. pp. 169–184. With 3 figs. (1 map). [12 refs.]

This is an interesting discussion of the rôles of familial susceptibility and of contagion in the epidemiology of leprosy based on various data recorded in the literature of the subject. The authors agree that the absence of congenital transmission is against hereditary transmission, but they do not think contagion is the sole factor, since the disease fails to spread to non-related persons equally exposed, so individual susceptibility may play a part. They admit in favour of contagion the frequent infection of children, with the first lesions in skin areas that come into contact with their parents, but suggest that those who acquire leprosy may have inherited a susceptibility to the disease.

L. R.

MANALANG (Cristobal). Intergovernmental Conference of Far Eastern Countries on Rural Hygiene with Particular Reference to Leprosy.—*Jl. Philippine Islands Med. Assoc.* 1938. Mar. Vol. 18. No. 3. pp. 125–134.

RAYMUNDO (Jose M.). Presidential Address.—*Monthly Bull. Bureau of Health.* Manila. 1938. Mar. Vol. 18. No. 3. pp. 93–99.

MOISER (B.). Hospitalization in Leprosy.—*Internat. Jl. Leprosy.* Manila. 1938. Apr.–June. Vol. 6. No. 2. pp. 167–168.

DE SOUZA-ARAUJO (H. C.). La lèpre au Brésil et sa prophylaxie. [**Leprosy Prophylaxis in Brazil.**]—*Bruxelles-Méd.* 1938. June 26. Vol. 18. No. 34. pp. 1119–1124. With 1 map.

The author states that leprosy, introduced into South America by European and negro slaves, is irregularly distributed. The North has most with 4 per mille. At the end of 1937, 32,984 cases had been counted, and 11,835 isolated, including 6,585 in São Paulo. Fifteen leprosaria are open and fourteen under construction, and six institutions receive the children of patients. In three courses of instruction are given. *L. R.*

LAMPE (P. H. J.). Typendifferentiatie van lepralijders, in endemiologischen zin. [**Types of Leprosy, considered Epidemiologically.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1938. Apr. 19. Vol. 78. No. 16. pp. 890–904. With 10 figs. on 4 plates. English summary.

The chances of infection within and without the family group are discussed. Both the solitary leper and the first case in a family are examples of infection without the family, which are considerably more numerous than intra-familial ones. In two village areas investigated the infections outside the family formed about 80 per cent. of the cases,

and an inquiry at the Batavia Leprosy Institute gave a figure of 66 per cent. Only rarely were as many as three cases found in one family, and this may be related to the potency of the source of infection.

L. R.

COCHRANE (R. G.) & RAJAGOPALAN (G.). **Preliminary Note on a Study of Childhood Leprosy at the Silver Jubilee Children's Clinic, Saidapet.**—*Leprosy in India.* 1938. Apr. Vol. 10. No. 2. pp. 54–61. With 2 figs.

This further contribution to the subject is based on a careful survey of the population of the Madras municipality of Saidapet. A school survey of 1,671 children revealed 108 definite or suspected cases, or 6 per cent. Of 206 cases in children in the municipality 91 were neural, 63 tuberculoid, 10 cutaneous and 40 with indefinite lesions. In the early periods of life distribution is about equal. Most cases developed between 6 and 13 years of age. In 50 per cent., infection was traced to an open case, and where more than one child was infected it was due to contact with a serious case. *L. R.*

RYRIE (Gordon A.). **Acute Ulcerative or Sloughing Tuberculoid Leprosy.**—*Internat. Jl. Leprosy.* Manila. 1938. Apr.–June. Vol. 6. No. 2. pp. 153–160. With 19 figs. (4 coloured) on 4 plates.

A case is described of acute ulcerative tuberculoid leprosy, which is said only to have been met with in Malaya. It is essentially a rapid flare up going on to exfoliation and occasionally sloughing, accompanied by low fever, and leaves deformities. It is intractable unless large doses of hydnocarpus oil are given by local injections, together with inunctions of hydnocarpus ointment to the ulcerated area. This gives striking results vindicating the use of hydnocarpus derivatives.

L. R.

KEIL (Ernst). **The Effect of Malaria on Leprosy and Filariasis.**—*Internat. Jl. Leprosy.* Manila. 1938. Apr.–June. Vol. 6. No. 2. pp. 161–165.

The treatment of malarial complication in 38 lepers by atebrin and plasmoquine was successful against the fever without influencing the leprosy condition. *L. R.*

WADE (H. W.) DE SIMON (D. S.) & FERNANDO (A. C.). **The Skin Lesions of Neural Leprosy. V. Observations in Ceylon.**—*Internat. Jl. Leprosy.* Manila. 1938. Apr.–June. Vol. 6. No. 2. pp. 199–222. With 30 figs. on 5 plates.

This is a further lengthy paper of the microscopical changes in nerve lesions. Major tuberculoid cases were few, but minor ones fairly numerous, and many of them regressive. Clinical differences and nerve involvement are related to the depth of the penetration of the lesions, and the frequency of nerve infection decreases with less severity of the skin lesions. Activation of cases may be related to climatic conditions. *L. R.*

RYRIE (Gordon A.). **Pregnancy and Leprosy.** [Correspondence.]—*Brit. Med. Jl.* 1938. July 2. pp. 39–40.

This letter records from an experience of six hundred cases of pregnant lepers that the disease does not influence pregnancy, but pregnancy has a most deleterious effect on leprosy, for it results in a slow progressive spread of the disease during the later months, continuing long after delivery. Dr. Ryrie thinks mineral depletion is a cause, for in his last twenty cases a diet with increased calcium intake tended to check the aggravation of the disease. The placenta and cord are free from lepra bacilli, and children removed at birth remain healthy. [These observations enhance the value of sterilizing leper husbands as successfully carried out by Dr. Wilson in Korea.]

L. R.

TISSEUIL (J.). Contribution à l'étude de la réaction lépreuse. [**Leprosy Reactions.**]—*Bull. Soc. Path. Exot.* 1938. June 8. Vol. 31. No. 6. pp. 469–471.

The author reports finding a polynuclear excess in reacting nodules, together with 80 per cent. of them in the blood. Prolonged reactions have a bad prognosis. *L. R.*

PLANTILLA (Fidel C.). Leprosy Manifestations. I. The Early Lesions.—*Monthly Bull. Bureau of Health.* Manila. 1938. Jan. Vol. 18. No. 1. pp. 21–26.

PLANTILLA (Fidel C.). Leprosy Manifestations. II. Differential Diagnosis.—*Monthly Bull. Bureau of Health.* Manila. 1938. Mar. Vol. 18. No. 3. pp. 77–81.

PÄRTELPOEG (W.). Ueber Tagesschwankungen der Blutkörperchensenkungsgeschwindigkeit bei Leprösen. [**Daily Variations in Sedimentation Rate in Leprosy.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1938. June. Vol. 42. No. 6. pp. 253–259. [20 refs.]

The red corpuscle sedimentation rates at different hours of the day in untreated and treated cases are recorded. In patients in which treatment had been stopped for two months the maximum readings were at midday, and the minimum ones in the early morning hours. Cases treated for two months with chaulmoogra preparations and carbonic acid snow showed a great decline in the midday maximum readings and a smaller one in the early morning minimum data.

L. R.

SOREL (F. P. J.). Prophylaxie de la lèpre dans les colonies françaises. [**Prophylaxis of Leprosy in the French Colonies.**]—*Bull. Office Internat. d'Hyg. Publique.* 1938. June. Vol. 30. Supp. to No. 6. 21 pp. With 43 figs. on 23 plates.

This lengthy paper gives full information regarding the campaign against leprosy in French possessions. It contains nothing of importance that is new. [See this *Bulletin*, 1937, Vol. 34, pp. 302, 303 and 905.] *L. R.*

FAURE-BEAULIEU (M.) & BRUN (G.). Les formes granulaires du virus lépreux dans les lésions hanséniennes, leur mutation *in situ* en formes bacillaires. [**Granular Lepra Bacilli.**]—*C. R. Soc. Biol.* 1938. Vol. 127. No. 14. pp. 1437–1440.

The authors report finding in stained sections of leprosy lesions, showing no lepra bacilli by ordinary examination, granular acid-resistant forms which they regard as a stage in the evolution of the organism. Some of them present a cyanophilic state. They also claim to have cultivated the organism and found mutation between the forms. *L. R.*

SAENZ (A.). Sur les caractères d'un bacille acido-résistant isolé par F. Lleras du sang de malades atteints de lèpre. [**Bacillus of Lleras isolated from the Blood of Lepers.**]—*Bull. Acad. Méd.* 1938. May 24. 102nd Year. 3rd Ser. Vol. 119. No. 20. pp. 579–583.

The author reports on a study of the acid-fast bacillus cultivated from leprosy patients' blood by Lleras. He obtained an identical bacillus from tap water, and both on injection intradermally produced the same reactions as those produced by other paratuberculous saprophytes. *L. R.*

MANALANG (J.). **Non-Acid-Fast Forms of** *My. leprae* **in Leprotic Lesions: Preliminary Report.**—*Jl. Philippine Islands Med. Assoc.* 1938. Mar. Vol. 18. No. 3. pp. 135–140. [12 refs.]

——. **Removal of Acid-Fastness from** *My. leprae*: **Further Observations.**—*Ibid.* Vol. 18. No. 4. pp. 205–209. [13 refs.]

In these two papers the author reports on the presence of non-acid-fast bacilli in leprous lesions and in portions of inguinal glands of lepers under different conditions.

In the first paper he reports the frequent finding of non-acid-fast forms of *Myco. leprae* in both treated and untreated lesions by three methods of staining, for the details of which the original should be consulted. He also found them at times in clinically active lesions in the absence of typical acid-fast bacilli, so regards them as a stage of the organism, either young or degenerating forms. They were much fewer in locally treated lesions than in lymph glands. From previous *in vitro* experiments he finds that antileprotic drugs had an injurious effect on acid-fastness of the bacilli, and that the non-acid-fast are probably degenerating forms.

In the second paper he reports that in lymph nodules kept *in vitro* with either iodized *wightiana* esters or the pure oil, the acid-fast bacilli become largely changed into non-acid-fast, and that this change is greater when the drugs are applied intermittently than continuously. He suggests that this explains the greater efficiency of intermittent intradermal injections of the hydnocarpus preparations. The *in vitro* changes were obtained in both boiled and unboiled lymph gland tissue. In *in vitro* treated tissues non-acid-fast bacilli are rare, probably because they are degenerate forms that become absorbed from the tissues. *L. R.*

DHARMENDRA & LOWE (John). **Attempts to cultivate *M. leprae muris*.**—*Indian Jl. Med. Res.* 1938. Apr. Vol. 25. No. 4. pp. 835–842. [20 refs.]

The authors report negative attempts to cultivate the rat leprosy bacillus, including the use of McKinley's method. [See this *Bulletin*, 1932, Vol. 29, p. 549; 1933, Vol. 30, pp. 238, 559; 1934, Vol. 31, p. 265.] *L. R.*

TISSEUIL (J.). Essai d'inoculation de la lèpre humaine au rat d'élevage, par injections quotidiennes pendant un mois. [**Inoculation Experiments.**]—*Bull. Soc. Path. Exot.* 1938. Apr. 6. Vol. 31. No. 4. pp. 277–279.

In this note the author reports the results of thirty successive daily injections of human leprosy material into rats. All had died or were killed by the end of nine months, but only local reactions were found, with no trace of infection. *L. R.*

WATANABE (Yoshimasa). **Experimental Studies on Animals concerning Leprosy, Report IX. Inoculation Tests with Human Leprosy, Part 2.**—*Kitasato Arch. Experim. Med.* 1938. Apr. Vol. 15. No. 2. pp. 179–198. With 6 figs. (4 coloured) on 2 plates.

This worker had previously obtained small rapidly absorbed nodules at the sites of the inoculation of human leprosy nodules into small animals. He has now repeated the experiments whereby TAKAGI claimed to have produced infection in this way after a preliminary treatment with venom, but obtained negative results. He found, however, that subtransplantations of the granulating tissues produced by leprous injections into rats could be effected up to a third but not to a fourth passage. The axillary glands were also affected, but only very rarely the spleen or liver, and the lesions were pseudotuberculous in nature rather than true leprous granulating tissue. *L. R.*

ADLER (S.) & ASHBEL (Rivkah). **Experimental Human Leprosy in the Hamster. Resistance of Leprosy Bacilli to Drying and to Chaulmoogra.** [Demonstration.]—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. June 25. Vol. 32. No. 1. pp. 4–6.

This is a brief account of a demonstration of specimens to illustrate the resistance of lepra bacilli in thin sections of tissues to as long as seven days' desiccation over sulphuric acid, after which they could still infect hamsters. *L. R.*

BEAUDIMENT (R.) & TIVOLLIER (M.). Destruction des bacilles de la lèpre déposés sur les linges et les instruments. [**Destruction of Lepra Bacilli in Rags and Instruments.**]—*Bull. Soc. Path. Exot.* 1938. May 11. Vol. 31. No. 5. pp. 352–357.

MARCHOUX has shown that ordinary disinfection methods, including boiling, failed to free instruments from lepra bacilli alive or dead, so fallacies could arise. The authors have tested various methods of doing so, and recommend the use of 1 to 2 per cent. of soda for the purpose. Little is said regarding rags in the article except that disinfectants adequate to destroy the bacilli on instruments are liable to disintegrate fabrics. *L. R.*

RADNA (R.). Note sur la réaction de Mitsuda chez des sujets indemnes de lèpre. De l'influence du traitement de la lèpre sur la bacillémie lépreuse et sur les résultats de la réaction de Mitsuda. [**Mitsuda's Reaction.**]—*Ann. Soc. Belge de Méd. Trop.* 1938. Mar. 31. Vol. 18. No. 1. pp. 63–72.

The author reports similar results to those of previous workers from the use of Mitsuda's reaction, namely negative reactions in active cutaneous cases, and positive ones in nerve and recovering cases. Its appearance in a previously negative case is of good prognostic import [see this *Bulletin*, 1935, Vol. 32, p. 341]. *L. R.*

RABELLO, Jr. & PINTO (T.). Interêt de la séro-réaction de Witebsky, Klingenstein et Kuhn pour la connaissance des formes de la lèpre. [**Witebsky Reactions.**]—*Bull. Soc. Path. Exot.* 1938. May 11. Vol. 31. No. 5. pp. 339–341.

The authors report observations on the use in leprosy of the Witebsky, Klingenstein and Kuhn complement fixation test with a tuberculin antigen. They found it positive in 68 and 60 per cent. respectively of tropho-neurotic and of macular cases, and negative in 70 per cent. with cutaneous lesions; that is just the opposite to the Mitsuda leprolin test. *L. R.*

DE ALMEIDA (O.) & DE MOURA COSTA (H.). Traitement de la lèpre par les hautes pressions d'oxygène associées au bleu de méthylène. [**Oxygen under Pressure and Methylene Blue in the Treatment of Leprosy.**]—*Bull. Soc. Path. Exot.* 1938. May 11. Vol. 31. No. 5. pp. 346–351. With 1 fig.

This is an interesting account of combining methylene blue injections with oxygen under pressure. It is based on the finding that man can resist an atmosphere with an oxygen pressure of 2·5 to 4 atmospheres, but anaerobic organisms in particular cease to develop under an oxygen pressure of 4 to 5 mm. of mercury. In 1937 OSARIO and RABELLO reported clinical improvement and degeneration of the lepra bacilli in the tissues following submitting leprous patients to oxygen pressure.

Three injections intravenously of 5 to 10 cc. of methylene blue are first given, and when the drug ceases to be excreted in the urine the patients are submitted to the action of oxygen in a metal case similar to that used in cancer. The immediate results are congestion and slight oedema of the cutaneous lesions, and a furunculoid appearance of nodules, which may go on to suppuration in a day or two. No general symptoms appear except occasionally slight fever and some pain. Clinical improvement rapidly ensues, with diminution of infiltrations and nodules, and progresses in stages in some cases to the nearly complete disappearance of the lesions. Equally striking was rapid change from abundant typical lepra bacilli in the tissues to profound alterations of their morphology and granular changes, followed by great diminution in their numbers up to complete disappearance in some cases. In six cases they noted a change from negative to positive leprolin reactions, and alterations of its degree in three more. Microscopically retrogressive changes are well marked. The oxygen was applied at a mean pressure of 2·5 to 3·5 atmospheres in two to three applications for a total of 3¾ to 15 hours, and the cases

observed over a period of 4 to 6 months. The results were thus very remarkable and promising. [Equally good or better results might ensue from combining the oxygen pressure treatment with the use of the chaulmoogra preparations.] *L. R.*

TISSEUIL (J.), GUILHAUMOU (F.) & RIVOALEN (P.). Étude comparée de l'action thérapeutique des huiles neutres d'arachides et de chaulmoogra utilisées en injection intradermique. [**Comparison between the Activities of Ground-nut Oil and Chaulmoogra Intradermally Administered.**]—*Bull. Soc. Path. Exot.* 1938. July 6. Vol. 31. No. 7. pp. 585–587.

The authors report on comparative trials of chaulmoogra and Sudan ground nut oils intradermally in leprosy. They found the former to have a rapid favourable action, and the latter to have only a feeble one of short duration. *L. R.*

TISSEUIL (J.) & RIVOALEN (P.). Action du beurre de Gorli par voie intradermique dans les lèpres tuberculoides. [**Gorli Butter Intradermally in Tuberculoid Leprosy.**]—*Bull. Soc. Path. Exot.* 1938. July 6. Vol. 31. No. 7. pp. 591–592.

The authors report a trial in two tuberculoid cases of intradermal injections of Gorli butter (which contains chaulmoogric acid) 40 per cent. in olive oil, warmed to facilitate injection. They record a slow improvement in the cases. *L. R.*

LABERNADIE (V.) & GUICHARD (F.). Au sujet de la neutralisation des huiles d'hydnocarpus en vue du traitement de la lèpre. (Conséquences chimiques.) [**Neutralization of Hydnocarpus Oil for Treatment of Leprosy.**]—*Rev. Méd. Française d'Extrême-Orient.* 1938. Feb. Vol. 16. No. 2. pp. 120–122.

This is a technical paper in which the authors conclude that the neutralization of hydnocarpus oil by the procedure of LE NAOUR and ROUBAUD yields a product free from glycerine and containing little active glyceride. *L. R.*

BOSE (D. N.). **Effects of Treatment of Trophic Ulcer of the Sole of the Foot in Leprosy by Injections of Hydnocarpus Preparations.**—*Leprosy in India.* 1938. Apr. Vol. 10. No. 2. p. 70. With 4 figs. on 1 plate.

The author reports cases, with photographs [poorly reproduced] before and after treatment, successfully treated by weekly local injections of creosoted hydnocarpus oil, as advised by LOWE and CHATTERJI. *L. R.*

DE (N. K.). **Studies of the Factors affecting Oxidation of Hydnocarpus Oil.**—*Leprosy in India.* 1938. July. Vol. 10. No. 3. pp. 76–82.

The authors report on a study of methods to prevent or remove the irritating oxidation of hydnocarpus oil. They advise careful selection

of the seeds, to be used fresh, the prevention of contamination during expression with water and foreign matter, filtration and subsequent storage in full bottles without exposure to air and light. *L. R.*

DORNER (Alfred). Zur Kenntnis des Chaulmoograöles und einiger daraus hergestellter Präparate. [**Chaulmoogra Preparations.**]—*Deut. Med. Woch.* 1938. Aug. 26. Vol. 64. No. 35. p. 1257.

This brief paper deals with the preparation of chaulmoograte and antileprol on the usual lines. *L. R.*

TISSEUIL (J.). Contribution à l'étude du traitement de la réaction lépreuse. [**Treatment of Leprosy Reactions.**]—*Bull. Soc. Path. Exot.* 1938. June 8. Vol. 31. No. 6. pp. 465–468.

The reactions occurring after intravenous injections of methylene blue are discussed. The author concludes that intravenous injections of 0·1 per cent. of the dye with 4 per cent. glucose and 0·4 to 0·9 per cent. sodium chloride are beneficial in arresting the reactions, relieving the pains, causing the oedema to disappear and the new lesions to be absorbed. If, however, fever with increasing weakness persist the injections should be stopped for a time. *L. R.*

BADGER (L. F.) & PATRICK (D. W.). Effects of Intramuscular Injections of Vitamin B_1 on Acute Leprous Neuritis and of Oral Administration on the General Disease. A Preliminary Report.—*Public Health Rep.* 1938. June 17. Vol. 53. No. 24. pp. 969–978.

BARÉ (J.). Sur le traitement de la lèpre par les injections intraveineuses d'huile de chaulmoogra neutralisée. [**Chaulmoogra Intravenously in Leprosy.**]—*Bull. Soc. Path. Exot.* 1938. May 11. Vol. 31. No. 5. pp. 341–345.

This note reports three cases of leprosy treated for six months with intravenous injections of neutralized chaulmoogra oil with improvement. *L. R.*

RADNA (R.). Sur le traitement des algies lépreuses par le cobranyl. [**Treatment of Leprosy Pains by Cobranyl.**]—*Ann. Soc. Belge de Méd. Trop.* 1938. Mar. 31. Vol. 18. No. 1. pp. 73–74.

The author reports uniform relief in 21 cases of leprosy pain following the weekly injection of cobra venom in 0·02 to 0·1 mgm. doses of Meurice's cobranyl. *L. R.*

GASS (H. H.). **Cobra Venom in Leprous Neuritis.**—*Leprosy in India.* 1938. Apr. Vol. 10. No. 2. pp. 37–40.

The author reports on the use of cobra venom in 35 cases of leprous neuritis with marked improvement in 17, considerable improvement in 15, slight in 2, and none in 1. *L. R.*

MARCHOUX (E.) & CHORINE (V.). La muqueuse rectale est perméable au bacille de Stefansky. [**Permeability of the Rectal Mucosa to Rat Leprosy Bacilli.**]—*Bull. Soc. Path. Exot.* 1938. June 8. Vol. 31. No. 6. pp. 462–464.

These workers report successful experiments in transmitting the infection of rat leprosy by careful instillation of emulsions containing Stefansky's bacillus into the rectum of rodents. The mesenteric glands showed the bacilli. *L. R.*

MARCHOUX (E.) & CHORINE (V.). Perméabilité de la muqueuse buccale du rat au bacille de Stéfansky. [**Permeability of the Buccal Mucous Membrane to Rat Leprosy Bacilli.**]—*Bull. Soc. Path. Exot.* 1938. July 6. Vol. 31. No. 7. pp. 580–582.

Infection through the buccal mucous membrane, with precautions to prevent any flow down the oesophagus, resulted in one of five rats developing clear infection of the submaxillary glands alone 17 months later, although another showed no infection after seven months, so the incubation period was long. *L. R.*

CHORINE (V.) & BERNY (P.). Note sur quelques essais infructueux de traitement de la lèpre murine. [**Unsuccessful Attempts at treating Rat Leprosy.**]—*Bull. Soc. Path. Exot.* 1938. July 6. Vol. 31. No. 7. pp. 588–591.

The authors report negative results in rat leprosy from the administration of selenium, cerium, tungsten, aluminium and sulphate of vanadium. *L. R.*

PAPAIOANNOU (A.). Recherches sur la culture et la transmission expérimentale à des animaux de laboratoire du bacille lépreux humain et du bacille de Stefansky. [**Cultivation and Transmission of Human and Rat Leprosy Bacilli.**]—*Bull. Soc. Path. Exot.* 1938. July 6. Vol. 31. No. 7. pp. 582–585.

The author reports having macerated for fifteen days in normal saline human leprosy nodule emulsions, and for the same time those of rat leprosy in glycerine, and claims subsequently to have cultivated both forms of bacilli in a medium resembling lymph in composition, and also to have infected rats, mice and spermophiles with the human cultures, and rats with Stefansky's bacillus. *L. R.*

MALARIA.

MILLETARI (Alessandro). **Maurizio Ascoli's Treatment in the Practice of a Malaria Control Station.**—*Jl. Trop. Med. & Hyg.* 1938. May 16 & June 1. Vol. 41. Nos. 10 & 11. pp. 168–170; 177–181. [65 refs.]

The author has treated 70 cases of malaria by Ascoli's method and gives details of 20 of these cases. His experience confirms the very numerous published reports as to the great value of the treatment. Its value lies not only in its remarkable effect on splenomegaly: still more marked is the great improvement in the patient's general condition. The author believes that the treatment increases the patient's resistance to the malaria parasite. Certain of the patients treated have remained for months free from further attacks of malaria though living in malarious localities. The treatment should only be used by a skilled staff. *Norman White.*

MOSNA (Ezio). Sulla cura di Maurizio Ascoli nella infezione malarica cronica. [**Treatment of Chronic Malaria by Ascoli's Method.**]—*Riv. di Malariologia.* Sez. I. 1938. Vol. 17. No. 2. pp. 126–130. With 1 plate. English summary (5 lines).

This is a record of the treatment of nine cases of chronic malarial splenomegaly by Ascoli's method. All received from 20 to 30 intravenous injections of adrenalin in the usual doses of from 1/100 to 1/10 mgm. In one case the maximum dose was increased to 1/7 mgm. In all cases the results were good. There was rapid improvement of the patients' general condition, cessation of splenic pain, and reduction in the size of the spleen, which was very marked in some cases. This reduction of the splenic volume persisted for eight months; in three cases a still further diminution of the spleen followed the cessation of treatment. *N. W.*

GRASSI (Gaetano). Note di un medico coloniale sulla cura di Maurizio Ascoli. [**Colonial Doctor's Experience of Ascoli's Method of Treatment.**]—*Policlinico.* Sez. Prat. 1938. July 4. Vol. 45. No. 27. pp. 1271–1273.

The author relates his experience of Ascoli's method of treatment of malaria and writes enthusiastically of its value. *N. W.*

BELL (D.). **Malarial Splenomegaly: Treatment by Ascoli Therapy.**—*East African Med. Jl.* 1938. May. Vol. 15. No. 2. p. 51.

Six cases of malarial splenomegaly in Kiambu were treated by Ascoli's method. The size of the spleens in these cases varied from 4 fingers' breadth below the costal margin to four inches below the umbilicus. In all cases after 20 days' treatment the spleen receded to the costal margin. Splenic pain ceased after three days. The red cell count rose rapidly but not the haemoglobin. *N. W.*

SINTON (J. A.). **Action of Atebrin upon the Gametocytes (Crescents) of** *Plasmodium falciparum.* [Demonstration.]—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. June 25. Vol. 32. No. 1. pp. 11–12.

" Atebrin is known to produce morphological changes in both the sexual and the asexual forms of *P. vivax* and *P. malariae,* and also in the asexual forms of *P. falciparum.* On the other hand, it is reported by many workers to have no action upon the gametocytes of the last parasite. When the drug is given to a patient showing mature crescents in the peripheral blood, these forms are apparently unchanged and are still capable of causing transmissible infection in mosquitoes.

" Some observations made at Horton during the past year, have shown that atebrin is not without effect upon the crescents of the Roumanian strain of *P. falciparum* used there for malaria therapy. *If* the drug be administered *before* these forms are detected in the peripheral blood, it appears to cause morphological changes in the immature stages of the sexual forms. When the crescents appeared the following changes were noted :—

" (*a*) The majority of the gametocytes first seen showed the pigment aggregated into a single, solid mass. Very many appeared to be immature. Some forms apparently normal also occurred, but others showed signs of commencing clumping of the pigment.

" (*b*) Within the next day or so the forms with large pigment blocks become relatively scanty, their place being taken by crescents showing either (i) very scanty pigment grouped as a few jet-black blocks or granules ; or (ii) a complete absence of pigment.

" These forms resemble haemogregarines very closely. In many of them the chromatin appears to be normal, while in a few it looks atypical, suggesting serious damage by the drug.

" (*c*) During the following days the number of pigmentless crescents tends to diminish, while those with scanty pigment increase in relative frequency.

" (*d*) In smears from the spleen of a patient who died of pneumonia 2 days after completing a full course of atebrin treatment, a very large number of apparently mature gametocytes were found. A few appeared to be quite normal, some had the pigment clumped into a large mass, and many showed scanty pigment or were pigmentless. Some of the pigment-free forms had a large block of extracellular pigment attached to one pole. This looked as if it had just been extruded from the crescent.

" These findings are evidence that atebrin causes clumping of the pigment in immature gametocytes, and that the absence of pigment in some forms is probably due to the extrusion of this substance rather than to any failure of the parasite to produce it. One would expect that parasites from which the pigment had been extruded, might be seriously damaged, yet mosquitoes fed on patients showing very large numbers of atebrin-affected forms developed heavy infections. As it was possible that the mosquito infection was derived from some apparently normal gametocytes still present, further investigations were carried out which showed :—

" (*e*) *Formation of Gametes.*—(*i*) Female gametocytes round up prior to fertilization, although devoid of pigment, and (*ii*) male gametocytes without pigment or with only a few grains, seem to exflagellate normally.

" (*f*) *Fertilization.*—Female gametes with large blocks of pigment seem to attract microgametes in the same manner as do normal macrogametes.

" (*g*) *Oökinetes.*—Vermicules with little or no pigment could be found in smears of the gut contents of mosquitoes fed 25 hours previously on a suitable patient.

" (*h*) *Oöcysts.*—The number of oöcysts which developed appeared to be out of proportion to the number of normal gametocytes. Most forms observed on the 6th day showed scanty pigment collected into small blocks, an appearance very different from the abundant, more discrete,

scattered pigment granules seen in normal oöcysts at this stage. In normal oöcysts about 9 days old, it is difficult to find forms without detectable pigment, while pigment was very rarely found in atebrin cases.

"These findings appear to show that many gametocytes with little or no pigment are still capable of undergoing their development in the insect host."

THOMSON (Jean). **A Case of Possible Atebrin Toxaemia with Reference to Published Articles.**—*Jl. Assoc. Med. Women in India.* 1938. May. Vol. 26. No. 2. pp. 34–37.

This paper contains the description of a case of malignant tertian malaria in a woman in the ninth month of pregnancy. She was treated with atebrin 0·1 gm. three times a day. After she had received 0·8 gm., in all, symptoms of liver damage developed, jaundice, very scanty urine, albuminuria and drowsiness amounting to semi-consciousness. She recovered under appropriate treatment and the use of quinine. [There is but little evidence that atebrin was responsible for the condition.] *N. W.*

DOMÍNGUEZ CALÁN (José M.). La asociación medicamentosa atebrina-plasmoquina como medio curativo de la infección palúdica en campañas de lucha antipalúdica. [**The Value of Atebrin associated with Plasmoquine in the Cure of Malaria.**]—*Riv. di Malariologia.* Sez. I. 1938. Vol. 17. No. 2. pp. 111–121. With 1 fig.

The author reports his experience with atebrin and plasmoquine in the treatment of cases of *vivax* infection, with special reference to the prevention of relapse, and contrasts the results with those obtained by him with quinine in a large series of cases. Seventeen cases were treated with atebrin, 0·3 gm. a day for 7 days, followed, after an interval of 3 days, by plasmoquine, 0·03 gm. a day for 5 days; the relapse rate was 1·20 per cent. Ninety-seven cases were treated with atebrin for 5 days and plasmoquine for 5 days in the same doses as before; the relapse rate was 1·11 per cent. Thirty-six cases were treated with atebrin for 5 days and plasmoquine for 7 days; there were no relapses. The relapse rate of 2,712 cases treated with quinine for 20 days, 1·0 gm. a day for adults, was 59·58 per cent. *N. W.*

NUCCIOTTI (Lionello). Ricerche sulla terapia adrenalinica nella malaria estivo-autunnale primitiva. [**Adrenalin Therapy in Primary Attacks of *Falciparum* Malaria.**]—*Riv. di Malariologia.* Sez. I. 1938. Vol. 17. No. 2. pp. 131–136. With 2 graphs. German summary (6 lines).

The observations recorded in this paper were designed to test the influence of adrenalin therapy, administered immediately after the cessation of the primary attack in primary malignant tertian infections, on febrile and parasite relapses, and on the gametocytes of *Pl. falciparum*. The observations were made in East Africa where, according to Italian observers, the strain of *falciparum* commonly met with is dissimilar in certain respects from Italian strains of that parasite. The designation *immaculatum* has been given to the African strain in question. Prolonged observation has led the author to believe that from the point of view of relapse production following primary

infections the Italian and *immaculatum* strains of *falciparum* are strictly comparable.

In ten cases the primary attack was treated with quinine. As soon as the temperature had fallen to normal a series of twelve intravenous injections of adrenalin was given on twelve successive days. The dose given in each of the first six injections was 1/20 mgm ; in the last six it was 1/10 mgm. The patients were kept under observation from 35 to 38 days. Only three of the ten suffered any febrile relapse during this period. Parasite relapses were much more frequently observed ; ring forms were commonly seen in the blood of patients with normal temperatures.

Six other patients harbouring crescents in the peripheral blood were submitted to exactly similar treatment as the first group. The blood was examined daily throughout the adrenalin treatment and during the following five days. Adrenalin did not have the least influence on the production of crescents ; they persisted in the blood in all six cases. *N. W.*

RAYMOND-HAMET. Sur l'activité de l'aricine, alcaloïde découvert en 1829 par Pelletier et Coriol, et non encore étudié physiologiquement. [**The Action of Aricine, an Alkaloid (of Cinchona).**]—*Bull. Acad. Méd.* 1938. July 5. 102nd Year. 3rd Ser. Vol. 120. No. 26. pp. 35–42. With 6 figs. [12 refs.]

In 1829 questions arose regarding the quality of quinine or the " bark " coming from certain parts of Peru. Some of those who used it said that the cortex contained no quinine. PELLETIER was instructed to undertake analysis of it, and with his colleague, CORIOL, examined specimens of the cortex sent from Arica, a port on the coast of Peru. They reported that this bark contained no quinine but a new alkaloid which they named *aricine* from its place of origin. Upon this report introduction of bark from this source ceased and in 1873 HESSE expressed doubt as to the existence of any such alkaloid. Four years later, however, he had an opportunity of analysing more samples and found *aricine* present in a proportion of 0·62 per cent.

More recently, in 1890, MOISSAN and LANDRIN extracted 3–3·5 per cent. of *aricine* from specimens of Cinchona bark.

The author gives in this article a detailed account of its physiological action on the circulation—it lowers arterial pressure. [There is no published account, so far as the reviewer is aware, of this alkaloid being tried in the treatment of malaria.] *H. H. S.*

MOTZFELDT (Ketil). Sulfanilamid ved malaria. [**Sulphanilamide in Malaria.**]—*Norsk Mag. f. Laegevidenskapen.* 1938. Aug. Vol. 99. No. 8. pp. 872–874. With 3 figs.

A man, aged 41, was treated with malaria for his general paralysis. The administration of 1 gramme of proseptasine three times a day promptly cured the malaria which did not recur during a five months' observation period. Another patient, aged 33, had suffered from malaria in Africa three years earlier, and had also been inoculated with it for his cerebrospinal syphilis. The administration of proseptasine (1 gramme three times a day) was promptly effective, and when the malaria recurred two weeks later, it disappeared under the same treatment. In his review of the recent literature of the subject,

Motzfeldt points out that all the three principal forms of malaria appear to be equally amenable to treatment with sulphanilamide. He is, however, reserved in his opinions as to the prospects of this drug becoming a universally accepted specific against malaria.

C. Lillingston.

COGGESHALL (Lowell T.). **Prophylactic and Therapeutic Effect of Sulfonamide Compounds in Experimental Malaria.**—*Proc. Soc. Experim. Biol. & Med.* 1938. June. Vol. 38. No. 5. pp. 768–773.

The effect of sulphonamide and sulphanyl-sulphanilate has been tested on controlled experimental malaria infections by *P. knowlesi* in *rhesus* monkeys. Both drugs were given intraperitoneally and the former by mouth as well.

Following intraperitoneal inoculation of 1 million parasites into a test monkey, which was simultaneously given 0·25 gm. sulphanilamide by the same route and for four consecutive days, infection failed to develop, while the control animal died. A similar experiment in which drug treatment was delayed till parasites appeared in the blood, 0·75 gm. sulphanilamide being given in all, resulted in a chronic low grade infection in one animal, the control dying within the normal period. The latter experiment repeated on four test animals, with administration of drug at different intervals after inoculation, either prevented appearance of parasites in the blood, or caused them to disappear on treatment. The parasites were, moreover, distorted and broken. In prophylactic experiments in which the same drug was given to some animals intraperitoneally and to others by mouth on four consecutive days before inoculation with infected material, either infection did not result or the appearance of parasites was delayed. Infected blood incubated with the drug for 30 minutes at 37°C. failed to produce infection in normal monkeys.

Sulphanyl-sulphanilate has some therapeutic value if given early in the disease, but no prophylactic value, and *in vitro* the drug has little or no effect on the parasite.

Experiments in which chronically infected monkeys were treated with these drugs for six consecutive days showed that the blood of animals receiving sulphanilamide was not infectious to fresh monkeys, whereas the blood of those receiving the other drug was. Neither drug has prophylactic or therapeutic value in *P. cathemerium* infections of canaries or in *P. lophurae* infections of young chicks.

J. D. Fulton.

REY (Fernando). Malariabehandlung mit Atepe-Tabletten (Atebrin compositum). [**Treatment of Malaria with Atepe Tablets (Atebrin Compositum).**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1938. July. Vol. 42. No. 7. pp. 305–307.

Local conditions in the lower Guadalquivir basin, an endemic focus of malaria, induced the author to attack the problem by drug treatment, with a view to sterilization of carriers. At the start patients received treatment with quinoplasmoquine but circumstances caused a switch over to Atepe tablets—each of which contains 0·1 gm. atebrin + 0·005 gm. plasmoquine. The drug was given on

five consecutive days, and in severe cases on seven days, in one daily dose without regard to time of day or interval from meals, on account of the large number to be treated. The daily dosage was as follows :—

Infants	½ tablet
1–3 years	½–1 ,,
3–5 ,, ...	1–1½ ,,
6–10 ,, ...	1½–2½ ,,
Over 10 years	3 ,,

These doses were well tolerated and no toxic symptoms noted except a slight abdominal pain in two cases, avoided by giving the dose at three different times. A slight yellow colouring of the skin, which slowly disappeared, was frequent at the end of treatment. Over a period of 8 months in 686 treated cases there was a relapse rate of 12 per cent. in benign tertian malaria. The author concludes that the drug is valuable, avoiding long periods of treatment, and making control easier. Secondary symptoms are absent, and the relapse rate is small. The method of administration and dosage requires further study. *J. D. Fulton.*

MAYER (Martin). Neuere Erkenntnisse zur Behandlung und Prophylaxe der Malaria. [**Modern Knowledge on the Treatment and Prophylaxis of Malaria.**]—*Schweiz. Med. Woch.* 1938. July 30. Vol. 68. No. 31. pp. 905–909.

DECOURT (Ph.). La lutte antiplasmodiale. Ses bases épidémiologiques et sociales. Ses directives générales. [**Epidemiological and Social Bases of, and General Directives for, Measures against the Malaria Parasite.**]—*Bull. Soc. Path. Exot.* 1938. Apr. 6. Vol. 31. No. 4. pp. 306–314.

This attempt to establish a doctrine which should inspire antiplasmodial measures is not easy to summarize. It contains nothing very original except in the manner of presentation. The increase of virulence of strains of plasmodia dependent upon rapid transmission from subject to subject is discussed. The "limit of benignity" is the degree of malaria infestation above which pernicious and fatal forms of the disease begin to appear. This rate, the limit of benignity, varies with numerous factors such as malnutrition, meteorological conditions and the degree of immunity of the population. Among a population with a low degree of immunity the rate corresponds to a parasite rate of about 30 per cent. It should be the aim of the hygienist to keep the parasite rate well below the "limit." In most malarious regions there are "virulent areas" in which the disease is more prevalent than elsewhere. They maintain specially dangerous strains of parasites, conserve active malaria during a large part of inter-epidemic periods and determine in large part the malaria of surrounding districts. The treatment of these "virulent centres" is one of the chief points of antiplasmodial measures.

Antiplasmodial measures should include specific chemoprophylaxis for "virulent centres"; limited specific chemoprophylaxis for areas of moderate endemicity, limited to certain groups of the population and to certain short periods of the year ; sanitary barrages ; the search for and the treatment of cases, and hygienic prophylaxis. *N. W.*

CIUCA (M.), BALTEANU (I.) & ALEXA (I.) with the collaboration of R. BALTEANU, V. BOERIU & A. RADIANOV. Expériences d'assainissement à l'aide de médicaments synthétiques. [**Experimental Control of Malaria with Synthetic Drugs.**]—*Arch. Roumaines Path. Expérim. et Microbiol.* 1937. Sept. Vol. 10. No. 3. pp. 295–306. With 2 graphs.

This is a very well documented report on an interesting experiment. In the absence of all other anti-malarial measures an attempt was made to control malaria by means of the administration of atebrin and plasmoquine. A village, Opriseni, of 136 houses with 725 inhabitants was selected for the experiment. A resident doctor and nine sanitary assistants were in charge of the work. The original plan was to submit every inhabitant to a five-day course of atebrin, 0·30 gm. a day for adults. Thereafter throughout the epidemic season everyone was to receive 0·02 gm. plasmoquine twice a week, and 0·20 gm. atebrin once a week. In spite of every endeavour only 651 persons of the 725 were induced to take the treatment; of these, 530 took it very regularly and followed it to the end. Thirty-one children below two years of age vomited soon after taking atebrin; this necessitated the cessation of treatment in certain cases. Atebrin taken on an empty stomach was the cause of discomfort. The experiment began on the 1st May, 1935, when the splenic index of children less than 14 years of age was 8·92, the splenometric index 14·54, and the parasite index 3·68; in November 1935, at the end of the experiment, these indices were 3·26, 4·34 and 0·48. In the two following years measures were limited to the treatment of cases as they occurred, with atebrin and plasmoquine. In November 1937, two years after the completion of the experiment, the splenic, splenometric and parasite indices were 2·79, 3·71 and 0·75, still considerably lower than they were before the experiment.

During the experiment 1·3 per cent. of the treated suffered from malaria as compared with 6·1 per cent. of the untreated or irregularly treated.

In spite of the efforts of the large staff it was only possible to apply the plan to 73 per cent. of the population. Without close supervision, which must be of necessity costly, striking results can hardly be expected. The method of control is thus of limited applicability.

N. W.

WATSON (Malcolm). Some Points in the Technique of the Prevention of Malaria.—*Jl. Ceylon Branch Brit. Med. Assoc.* 1938. Mar. Vol. 35. No. 2. pp. 178–195. [11 refs.]

RODHAIN (J.). Schizogonie sans pigment chez les pingouins infectés de *Plasmodium praecox* (*relictum*). [**Non-pigmented Schizonts in Penguins infected with** *P. praecox*.]—*C. R. Soc. Biol.* 1938. Vol. 127. No. 4. pp. 368–372. With 3 figs.

In this paper the author describes a malarial infection in four penguins (*Spheniscus demersus*) which died in the zoological gardens in Antwerp. In three cases associated with an infection of the red blood cells there were fairly numerous endothelial non-pigmented schizonts in the various organs. In one case, however, there were numerous endothelial schizonts in the organs, while only a single parasite

was found in a red cell. The infection of one penguin was established in canaries which, however, showed only parasites of the *Plasmodium praecox* type in the red cells and no endothelial schizonts. The author favours the view that the presence of endothelial schizonts in the penguins was due to infection having resulted from mosquito bites and not from blood inoculation, as was the case with the canaries. He thinks the evidence points to the endothelial schizonts, which occur not only in the fixed endothelial cells but also in the monocytes and histiocytes of the blood, being derived directly from the sporozoites.

C. M. Wenyon.

CHOPRA (R. N.) & DAS GUPTA (B. M.). **A Note on the Therapeutic Efficiency of Soluseptasine in Simian Malaria** (*P. knowlesi*).—*Indian Med. Gaz.* 1938. July. Vol. 73. No. 7. pp. 395–396. With 1 chart.

The authors have employed soluseptasine [disodium-p (γ-phenyl-propyl-amino) benzene-sulphonamide-α-γ-disulphonate] in two cases of *P. knowlesi* infection in monkeys. A 5 per cent. aqueous solution of the drug was used, very nearly isotonic with blood and well tolerated on subcutaneous, intramuscular or intravenous injection by all common laboratory animals.

Two cc. of the drug given intravenously to a monkey with chronic *P. knowlesi* infection caused the parasites, which were fairly numerous, to disappear 24 hours after injection. A second monkey undergoing its first attack—which is always fatal—was given 2 cc. of the drug intravenously when 40 per cent. of the red cells were infected and it had haemoglobinuria. Next day there was a marked fall in the parasite count, and degenerative changes were noted in the parasites. A similar dose was given intramuscularly 24 hours later, following which parasites rapidly disappeared from the blood and did not reappear for 12 days. They were then scanty and soon completely disappeared without further treatment. The authors conclude that the drug is a specific for *P. knowlesi* infection in monkeys.

J. D. Fulton.

CARR (Henry P.). *A. albimanus* **Breeding in Relation to Degree of Shade in Breeding Places.**—*Southern Med. Jl.* 1938. July. Vol. 31. No. 7. pp. 803–805. With 2 figs.

The author records observations in Cuba on the effect of shade on the breeding of *A. albimanus*. In streams exposed to sunlight larvae are numerous even though the stream be stocked with *Gambusia*. Abundant growth of *Spirogyra nitida* protects the larvae from the depredations of the fish. If a portion of such a stream be shaded the *Spirogyra* disappears within a month and so do the larvae. Similar adverse effects on mosquito breeding are noted even if larvicidal fish are not present: this may be due to the effect of shade on the microscopic organisms which constitute the food of the larvae. In Cuba the planting of shade trees alongside watercourses is an important anti-malaria measure: *Ficus benjamina* is the tree most favoured.

N. W.

Galvão (A. L. Ayrosa) & Lane (J.). Nota sobre os Nyssorhynchus de S. Paulo. VII. Estudo sobre as variedades deste grupo com a descrição de *Anopheles* (*Nyssorhynchus*) *albitarsis* Arrib., 1878 var *limai* n. var. [**A Note on the** *Nyssorhynchus* **of S. Paulo. 7. A Study on the Varieties of this Group together with a Description of** *Anopheles* (*Nyssorhynchus*) *albitarsis* **Arrib.**]—Reprinted from *Ann. Facul. Méd. Univ. São Paulo.* 1937. Vol. 13. pp. 211–238. With 12 figs. (4 on 2 plates). English summary.

The paper includes figures of eggs of a considerable number of species and varieties, many of them strikingly distinct from one another. The authors also give keys to the females, based on familiar external characters ; also to male terminalia ; also to eggs. The paper includes the description of a new variety of *Anopheles albitarsis*, which differs from the typical form mainly in egg characters. *P. A. Buxton.*

Lefebvre (M.). *A. minimus*, vecteur principal du paludisme au Laos. [*A. minimus* **Principal Vector of Malaria in Laos.**]—*Bull. Soc. Path. Exot.* 1938. May 11. Vol. 31. No. 5. pp. 387–390.

All regions in Laos in which *A. minimus* is very abundant are without exception intensely malarious. Hilly country of moderate elevation, covered in part with thick forest, with hill torrents, is specially favourable to *A. minimus*, and such country is plentiful in Laos. This anopheline is rare in flat low-lying places but in the hills where it is abundant it may be found breeding also in stagnant water. This adaptation probably enables the species to persist throughout the year and to multiply excessively immediately after the advent of the rains ; it explains, too, the constancy of malarial endemicity wherever it abounds.

Three other species probably play a rôle, of secondary importance, in the transmission of malaria in special areas in Laos. *A. maculatus* at high altitudes and on deforested mountains may be dangerous. *A. jeyporiensis* in the high valleys of Upper Laos, where the climate is relatively cold, is only found in infected areas ; it is, however, not very prevalent. *A. leucosphyrus* is also probably a vector in the cleared forest on the banks of the Mekong. Malaria, which can be attributed to the last three species, is characterized by seasonal recrudescence at the beginning of the rainy season, whereas *A. minimus* transmitted malaria tends to be constantly hyperendemic. *N. W.*

Covell (G.), Mulligan (H. W.) & Afridi (M. K.). **An Attempt to control Malaria by the Destruction of Adult Mosquitoes with Insecticidal Sprays.**—*Jl. Malaria Inst. of India* (formerly *Records of the Malaria Survey of India*). 1938. Mar. Vol. 1. No. 1. pp. 105–113.

The first controlled attempts in India to combat malaria by the regular spraying of dwelling houses with an insecticide, which are reported in this paper, have been very encouraging. In 1936 four communities in a very malarious section of Delhi urban area were the subject of experiment. The communities consisted of employees living in small but well-built quarters which could be effectively closed up. The rooms remained closed half-an-hour after spraying.

The insecticide used was Pyrocide 20 diluted with 19 times its volume of kerosene oil. At first the amount used was 2 cc. per 1,000 cubic feet of air space; later the quantity was halved. The results were as follows:—

Railway quarters: population 461; spleen rate (July) 68 per cent. Spraying daily from July 15th to October 31st except for 11 quarters which were not sprayed for the first six weeks. Fever cases in sprayed quarters 1·4 per cent., in unsprayed quarters 45·5 per cent. After six weeks all quarters were sprayed; combined fever rate in September and October 0·5 per cent. Spleen rate in November 51 per cent.

Pumping Station.—Population 56; spleen rate (July) 88 per cent. Sprayed daily from July 15th to October 31st. Total fever cases during this period 6. Spleen rate in November 63 per cent.

Electric Power House.—Population 295; spleen rate (July) 90 per cent. Quarters sprayed on alternate days beginning July 20th, after commencement of malaria season in this area. During first two weeks 113 cases of malaria; in third week 28 cases; in fourth 10; thereafter 5 a week. Spleen rate in November 59 per cent. Peak of malaria epidemic in Delhi was in last week of September.

Sewage Farm.—Population 190; spleen rate (July) 68 per cent. Each quarter sprayed every third day. Total number attending for treatment daily averaged 6 per cent. Spleen rate in November 29 per cent.

In 1937 spraying experiments were carried out in the two villages, Nizamuddin and Jangpura, both within the Municipal limits of New Delhi, with populations of 2,000 and 4,000, respectively. Malaria is hyperendemic in both; *A. culicifacies* probably the sole vector. Every room and cowshed in villages was sprayed twice a week from July 5th to October 23rd, *i.e.*, throughout the transmission season. Cases of fever were exceptionally few. Spleen rates in both villages were lower at the end of the malaria season than at the beginning, whereas in a neighbouring untreated village the reverse was the case. In Jangpura the average enlarged spleen was 13·1 cm. from the umbilicus in November as compared with 9·3 cm. in July, a remarkable change. The total cost for materials and labour worked out at about fourpence per head for the malaria season. *N. W.*

GROOTINGS (J. W.). Woningverbetering en malaria (voorloopige mededeeling). [**House Improvement and Malaria.**]—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1938. Vol. 27. No. 3. pp. 397–416. With 17 charts & figs. (6 on 3 plates). English summary.

The possibility of a connexion between house improvement as an antiplague measure and outbreaks of malaria has already been considered (this *Bulletin*, 1938, Vol. 35, p. 417). In the present article, which is on similar lines, it seems probable that the beneficent Government measure of compulsory house building to render dwellings plague-proof may bring explosive outbursts of malaria in its train. Assistance is given by the Government to the people who are included in these housing schemes but the "house improvement is definitely burdensome, certainly in a financial sense," The rise in mortality which is so conspicuous a feature in a series of districts, always at a definite stage of the building operations, is independent of plague, of season and of other factors and can only be ascribed to malaria.

Malaria might and did prevail in districts which were not within the scope of the scheme, or had not yet come within its scope, but was always of much lower degree. A direct correlation between house building and mortality, when the sequence of events is so well marked as it is here, can scarcely be denied. The rest of the argument, to show that it could only be due to malaria, seems satisfactory. A number of possibilities are considered as explaining the conjunction. "The improved house has created conditions which are more satisfactory for the anopheles but which are, from a malarial standpoint, more unsatisfactory for man." At all events mosquitoes appear to be more numerous in the new houses than in the old. Again it is considered that by house improvement the biological equilibrium of the population has been disturbed. A third and rather obvious possibility is the creation of breeding places for anopheles mosquitoes by the excavations made for building purposes and the production of man-made malaria.

It is certain that the housing operations, which are all-important in the campaign against plague, cannot be stopped and therefore measures are required other than this for the prevention of malaria outbursts. This is a difficult matter. Quininization would necessarily be adopted and an attack made upon breeding places (sawahs, fish ponds, drainage channels). "This is, however, impossible as both paddy culture and fish breeding play a very important economic rôle." There remain as measures to be adopted: (1) Cleaning up of drainage channels. (2) The cutting off and burning of stalks after the harvest. (3) The drainage and drying of the sawahs after the harvest. (4) The cleaning up of the water surface of permanent ponds and of the sawah fish ponds. (5) The introduction of fish to eat the pond vegetation. (6) The possible introduction of a distribution of mosquito curtains.

W. F. Harvey.

MISCELLANEOUS.

VOGEL & LE ROUZIC. Les maladies transmissibles observées dans les colonies françaises et territoires sous mandat pendant l'année 1936. [**Transmissible Diseases in the French Colonies and Mandated Territories in 1936.**]—*Ann. de Méd. et de Pharm. Colon.* 1938. Apr.–May–June. Vol. 36. No. 2. pp. 352–520. With 5 figs.

This report gives statistics, from the medical records of each French colony and mandated territory, of the principal tropical diseases met with in 1936 and compares the figures with those for 1935.

A short introduction indicates the more important facts revealed by the report. The diseases surveyed are classified under two headings :—(1) The epidemic diseases—plague, cholera, yellow fever, smallpox and typhus. (2) Endemic diseases, some of which may assume epidemic proportions – malaria, blackwater fever, trypanosomiasis, dysentery, relapsing fever, intestinal parasites, schistosomiasis, filariasis, dengue, beriberi, yaws and tropical sloughing phagedaena. Each disease is dealt with in turn, its prevalence, the prophylactic measures and treatment employed, and the organization by which the diseases are controlled in each colony, being described. Quite one-fourth of the report is devoted to trypanosomiasis, of which no less than 57,162 new cases were diagnosed in 1936.

In many diseases a fairly uniform system of treatment is employed throughout the colonies ; the results are briefly discussed.

The report reveals the immensity of the task undertaken by the French colonial medical services and will be useful for reference.

J. B. Davey.

VILLARET (Bernard). Climatologie médicale des etablissements français d'Océanie. [**Disease in Relation to Climate in the French Possessions in the South Seas.**]—*Rev. Méd. et Hyg. Trop.* 1938. Mar.–Apr. & May–June. Vol. 30. Nos. 2 & 3. pp. 87–108 ; 147–171. With 6 figs. (1 map). [27 refs.]

This is a study of the climatology and diseases of the French possessions in the Pacific. The 110 islands concerned lie in a huge quadrilateral with a side of 2,500 kilometres in latitude 8° to 28° S. and longitude 137° to 157° W. They include the Leeward Islands of the Society group, the Marquesas, Tuamotus, Austral Islands and Gambiers ; the last two groups are almost temperate. They are on the whole healthy. The chief diseases are elephantiasis, leprosy and tuberculosis : there is no malaria. They swarm with *Aëdes*. The climatic conditions are described at length with graphs. The population is given as 40,000, 24,000 of whom are in Tahiti. The houses are usually found on the coastal edge, rarely more than 100 metres from the sea, *i.e.*, in the least healthy part. The supply of potable water is usually poor and alcoholism is widespread. Malnutrition is common in some groups, especially among children. Depopulation has for the most part been arrested, a result attributed to the efforts of the French doctors. A table shows increase in the present

century except in the Marquesas where the loss is described as catastrophic : a medical post which would seem to have arrested it has been abandoned and the loss continues. A bar to the sanitating of these islands is their isolation and the consequent difficulties of sea transport. A table gives the birth and death rates of the different archipelagoes.

Elephantiasis.—This disease is in retrogression, due in at least two islands to the introduction of piped water. Its appearance in the Marquesas is of recent date and is perhaps related to the advent of political prisoners from the Leeward Islands in 1897. In the southern group of the Marquesas in 1932, 19 per cent. of deaths were attributed to filariasis and its complications. In islands which are further from the Equator and drier elephantiasis is rare. The aetiology of the disease is discussed and its relation to filariasis but little information is given of the filarial incidence.

Leprosy.—The number of lepers is estimated at 500–600, *i.e.*, at least 1·2 per cent. ; 175 are collected in an isolation village in Tahiti. The family use of a single room and the absence of fear of contact are favouring factors. It is considered to be a long established disease in Eastern Polynesia. In the Marquesas the custom of tattooing is thought to have favoured its extension in the southern group where the doctor and his dispensary have been axed. In the extreme east of the Tuamotus are the atolls of Reao and Pakaruha with 340 and 200 inhabitants. Following the introduction of two lepers, one marooned from a ship, in 1903 and 1915, examination in 1937 showed 101 infected or suspected lepers in Reao and 71 in Pakaruha ; 75 per cent. were under 15 years old. It is suggested that systematic examination of glands would facilitate early diagnosis and treatment.

Other diseases described are syphilis and gonorrhoea and tuberculosis. Yaws is found in Tahiti and the neighbouring island of Noorea ; the native name signifies native syphilis. *A. G. Bagshawe.*

KAMRA (B. L.). **Incidence of Pulmonary Tuberculosis in the Punjab Villages.**—*Indian Med. Gaz.* 1938. Aug. Vol. 73. No. 8. pp. 477–478. [Summary appears also in *Bulletin of Hygiene.*]

In a group of Punjab villages with populations of from 190 to 1,440, and total population of 15,884, during the period 13th December, 1935, to 31st March, 1938, 18,640 patients over the age of 10 years were treated at the outpatient department of the Sohangarh Rattewala dispensary. Of these, 53 were found, by sputum examination, to be suffering from pulmonary tuberculosis. The proportion of males and females was the same. During 1936 and 1937, 274 persons over the age of 10 years died, of whom 22 had pulmonary tuberculosis. The morbidity ratio was thus 1 to 351, the mortality ratio 1 to 12·5.

The insanitary conditions existing in these villages (which are free from any urbanization) is described. The buildings are huddled together and overcrowding in the houses is intense. The majority of the population are cultivators and labourers who are ill housed and ill fed. Their average income is about *Re.*0-1-6 daily for each person. Strict purdah is only rarely practised. Tuberculosis is therefore a problem of considerable magnitude in the villages.

[Reports of this kind are of the greatest value, representing as they do the experiences of workers in general medicine who are careful to make sure of their ground.] *C. W.*

DESVERNOIS. Traitement de l'ulcère phagédénique tropical par le Dmelcos intraveineux et les pansements à la P. amino-phenyl-sulfamide (1162 F.). [**Treatment of Tropical Ulcer by Dmelcos intravenously and Dressings containing p-amino-phenyl-sulphamide (1162 F.).**]—*Rev. Méd. et Hyg. Trop.* 1938. July–Aug. Vol. 30. No. 4. pp. 224–232.

In the Abyssinian war the Italian doctor FRANCHI found that 87 per cent. of phagedaenic ulcer patients gave a strong positive intradermal reaction with Dmelcos, and treatment with Dmelcos resulted in a more speedy cure than usual treatments. Before that RIOU had reported the bacillus of Ducrey in extragenital ulcers in natives of Senegal. This would explain the reactions obtained by FRANCHI and the results of Dmelcos treatment.

The author's trials were made at Kindia in French Guinea. Some patients had the usual dressings after intravenous injections of Dmelcos at 4-day intervals; others received ointment containing 1,162 F. In four observations of the first category cicatrization was obtained after 98, 56, 20 and 77 days. In seven of the second category the corresponding periods were 11 days (a European), 21, 42, 52, 20, 30 and 42 days. Control observations failed because the patients would not stand the long period of attendance. Details are given. The author considers the Dmelcos treatment superior to the usual methods. The ulcer rapidly loses its phagedaenic character and heals soundly. He suggests that where Ducrey's bacillus has been present the action is specific and where it has not, the benefit depends on shock. Retention in hospital is essential for at least the early part. *A. G. Bagshawe.*

JAMES (Clifford). **The Copper Sulphate Treatment of Tropical Ulcer and New Guinea Mouth Disease.** [Correspondence.]—*Med. Jl. Australia.* 1938. June 25. 25th Year. Vol. 1. No. 26. pp. 1108–1109.

Dr. James comments on GUNTHER's paper reviewed recently [see this *Bulletin*, 1938, Vol. 35, p. 829] and cites the results of his nine years' experience in Melanesia. In his hospital in New Britain, Mandated Territory of New Guinea, ulcers and their complications accounted for most of the deaths. In these serious cases curetting or excision is often necessary followed by skin grafting with or without copper sulphate treatment. Gunther uses a 1/150 solution of $CuSO_4$; James employs a stronger solution. His method is appended.

"Copper sulphate, one ounce.

"Glycerine, two ounces.

"Acid carbolic, one drachm to the ounce of resulting solution.

"Crush the copper, put it and the glycerine into an enamel bowl and heat. Stir, allow to cool, and pour off the solution, leaving any undissolved crystals in the bowl. Add one drachm of carbolic to each ounce of solution. The carbolic is an anaesthetic and diminishes the sting of the copper, and the glycerine enables a strong and stable solution to be obtained. This is not the case with water.

"Method of Use.—Gently clean the ulcer with wool swabs. Place the limb horizontally, and apply the solution on a piece of wool rolled to the size of a pea. Continue the application until the surface feels hard and granular, that is for, say, two to three minutes. Only good can come of prolonging the application, and should any run over on to healthy

skin, though best avoided, it is innocuous. Then put on a small dressing of acriflavine on gauze and wool (1/1,000) and cover it with a hot foment and protective. This is soothing, cleansing, and reduces the swelling. The same evening, the ulcer may or may not be ' messy ' as the result of the morning's application. Repeat the application then or not until the morning, according to the severity of the ulcer. Put on the acriflavine foment. On the next morning, the ulcer is usually clean and aseptic. If still a small area of dark colour, repeat application. Most ulcers are clean after applications on two consecutive mornings. On the fourth morning, scarlet red ointment and adhesive plaster can be applied."

[See also this *Bulletin*, 1933, Vol. 30, p. 644.] *A. G. Bagshawe.*

MENGHETTI (Alfredo). L'autoemoterapia dell'ulcera tropicale. [**Autohaemotherapy of Tropical Ulcer.**]—*Ann. di Med. Nav. e. Colon.* 1938. July–Aug. Vol. 44. No. 7–8. pp. 328–336. With 3 figs.

HOLLAND (E. A.). **Suicide by Ingestion of Derris Root Sp. in New Ireland.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. Aug. 25. Vol. 32. No. 2 pp. 293–294.

Derris root is used in the East Indies as an arrow poison and more widely as a fish poison and an insecticide. In the New Ireland part of New Guinea it is by no means uncommonly used for suicidal purposes. Vomiting usually results in ejection of the eaten root and chemical tests to detect it or its products in the residual gastric contents are not satisfactory. The proof lies in the fact that the subject has been seen eating the root or a nibbled fragment is found beside the body. Practically the only marked condition noted at autopsy is " acute congestive cardiac failure." Symptoms are those of collapse with weak pulse and dilated pupils. Prompt gastric lavage and exhibition of stimulants are the best treatment. An antidote employed by the natives is the sap expressed from the roots of the banana plant which acts by producing further emesis. *H. H. S.*

HOLLAND (E. A.). **Some Vegetable Poisons of New Guinea.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. Aug. 25. Vol. 32. No. 2. p. 295.

This is little more than a note calling attention to two vegetal poisons found in New Guinea and mentioning others. The two are *Barringtonia speciosa*, which is used for fish poisoning and also with homicidal and suicidal intent, and contains prussic acid or some powerful cyanogenetic principle ; and *Pangium edule*, a fruit which is wholesome when ripe but if not ripe causes illness and even death. There is also a wild tree of this species which is poisonous, fruit and kernel, at all stages. Its toxic constituent is the same.

Other poisonous plants mentioned are *Dioscorea triphylla* [see this *Bulletin*, 1938, Vol. 35, p. 76, where another toxic species of Dioscorea is referred to], *Amorphophallus campanulatus*, *Alocasia indica*, *Tacca pinnatifida* and *Entada scandens*. [It would be a study both interesting and instructive to determine the toxic principles and modes of action of these.] *H. H. S.*

HARRISON (G. A.). **Estimation of Haemoglobin in Undiluted Blood, using a Lovibond Comparator.**—*Lancet.* 1938. Sept. 10. pp. 621–622. With 2 figs.

The paper describes a simple method for the clinical estimation of haemoglobin which avoids errors of dilution.

Blood is run into a special cell and compared by transmitted light with a series of coloured glasses in a Lovibond Comparator. The cell consists of two plates of optically worked white glass held apart at a fixed distance (+ 3 per cent. error) and takes about 0·03 cc. blood. The colour standards are combinations of red and yellow Lovibond glasses cemented together and mounted in a revolving carrier ; the colours are said to be permanent in hue, saturation and brightness. The instrument is calibrated to read directly percentages corresponding to the Haldane scale. The apparatus is prepared by The Tintometer Ltd., Milford, Salisbury.

F. Murgatroyd.

DURIEUX (C.) & ARQUIÉ (E.). Intérêt que présente la conservation à basse température d'un échantillon de sang de malade pour le diagnostic des manifestations fébriles dans les pays chauds. [**Conservation of Blood for Diagnostic Tests in Warm Climates.**]—*Ann. de Méd. et de Pharm. Colon.* 1938. Apr.–May–June. Vol. 36. No. 2. pp. 334–340.

In French West Africa [and elsewhere] occur diseases which it is impossible to diagnose without the aid of a laboratory. The authors have investigated the length of time which may elapse between the time of taking a sample of blood and of its yielding satisfactory results on examination at a laboratory, when the sample has been maintained in a cold environment, such as ice in a thermos flask. Some examples are given : Blood from a typhoid fever patient, after a delay of 11 days in transit, gave a growth of *Bact. typhosum* in 24 hours ; another which had taken 15 days gave a growth in 5 days ; from a patient with *Bact. paratyphosum A* infection gave a growth in 48 hours after 12 days in transit ; haemolytic streptococci grew from blood after 13 days' journey ; pneumococci after a like interval. Such a length of time would allow specimens to be sent from anywhere in a district even remote. *H. H. S.*

BAILEY (Harry D.). **A Practical Stain for the Spirochetes of Syphilis and Vincent's Angina.**—*Jl. Lab. & Clin. Med.* 1938. June. Vol. 23. No. 9. p. 960. [Summary appears also in *Bulletin of Hygiene.*]

Smears of serum exuding from scraped lesions, or of tissue juice, or of ulcerative material are dried and fixed by heat.

1. Cover with N/20 HCl for 10 seconds.
2. Wash in running water 5 seconds.
3. Gram's iodine 5 to 10 seconds. Wash.
4. Aniline gentian violet 5 to 10 seconds. Wash.
5. Gram's iodine 5 to 10 seconds. Wash.
6. Aniline gentian violet 5 to 10 seconds. Wash, blot and examine.

A deeper coloration may be obtained by repeating the iodine and aniline gentian violet a third time. Gentian violet without aniline oil may be used. The stain is not permanent but the method is better than dark ground illumination where spirochaetes are few. *C. W.*

RADHAKRISHNA RAO (M. V.). **Cirrhosis of the Liver in Northern Circars (South India).**—*Jl. Indian Med. Assoc.* 1936. Dec. & 1937. Jan., Mar., Apr., May, June & July. Vol. 6. Nos. 3, 4, 6, 7, 8, 9 & 10. pp. 135–138; 190–201; 304–312; 363–371; 438–445; 512–523; 567–571. With 29 figs. (28 on 7 plates). [251 refs.]

The following papers, reprinted from the Journal of the Indian Medical Association, December 1936, January 1937 and March to July 1937, form a thesis which is based upon an investigation undertaken to elucidate the important problems of cirrhosis of the liver, as met with in the Northern Circars.

Definition and Classification of Cirrhosis of the Liver.—The main headings of the author's classifications are :—

(A) *Degenerative.*
  1. With pseudolobulation—(a) Portal cirrhosis.
     (b) Toxic cirrhosis.
  2. Without pseudolobulation—cardiac fibrosis.

(B) *Inflammatory.*
  1. Biliary sclerosis.
  2. Diffuse interstitial infections.
  3. Periportal and focal sclerosis.

Portal Cirrhosis.—A chronic, progressive, diffuse, degenerative hepatitis and fibrosis of obscure aetiology, usually fatal, commonly seen in the poorer class in the third and fourth decades in the Northern Circars.

The disease is characterized clinically by emaciation, secondary anaemia, subicterus, dry skin, atrophic liver, enlarged spleen, prominence of superficial abdominal veins, ascites and a cholaemic termination. Histologically, the parenchyma of the liver is divided by a collagenous connective tissue net-work, into rounded islands of various sizes containing two or more of the so-called lobules.

Tobacco, bacillary dysentery and malaria were thought by the author possibly to predispose to the condition ; but this is so speculative that it seems of little value. He states that alcohol and arsenic played little part in the production of cirrhosis and " excessive indulgence in hot spices was not a marked feature " [he also states " excess of chillies in the diet was almost a constant finding "]. Dietetic deficiencies appeared to be important factors, non-specific focal infections were commonly present and more than 75 per cent. of the patients had some evidence of syphilis ; anti-syphilitic treatment seemed to produce significant results. Since splenic enlargement was observed in a number of cases before the onset of ascites the author thinks it is probable that the hepatic lesions are due to toxaemia of splenic origin but, as he says, it is " far from clear."

Detailed descriptions of the findings at autopsy and the clinical features are given. The duration of life after the onset of ascites was from 2–12 months and anti-syphilitic treatment was most important, but only in a small number of cases did it give good results.

Toxic Cirrhosis. (a) *Subacute toxic cirrhosis of infants.*—A progressive, rapid and fatal disease commonly seen in the children of middle and rich class vegetarian Hindus, between the ages of 1 and 3 years, characterized in the early stages by a progressive persistent and painless enlargement of the liver, irregular intermittent fever and constipation, and in the later stages by gradual contraction of the liver,

jaundice, enlargement of the spleen and ascites. Histologically, the liver showed subacute necrosis of the parenchyma, extensive obliterative lesions of the smaller divisions of the hepatic venous tree and replacement fibrosis: attempts at regeneration of the hepatic parenchyma were usually not marked.

Chronic alcoholism in the parents, kala azar, malaria, syphilis, parasitic infection of the liver or dietetic errors were not found to be aetiologically related to the disease; the course suggested a toxic cause but this could not be determined.

The duration was rarely more than 6–10 months from the onset of the first symptoms; the prognosis was uniformly bad and the treatment empirical, symptomatic and unsatisfactory.

(b) *Toxic cirrhosis of adults.*—Four cases were diagnosed at autopsy. Poisoning by any of the commoner agents was not found, and the aetiology did not differ from that of portal cirrhosis, but perhaps arsenicals used for the treatment of syphilis may have played some part, although an endogenous toxin could not be excluded.

Cholangitic Hepatic Sclerosis.—The disease is characterized by chronic icterus, enlarged liver, enlarged spleen, biliuria without acholia of the stools, absence of ascites and evidences of portal obstruction until late in the disease, and by an age incidence between 20 and 40 years. Histologically, a pericholangitic leucocytic infiltration, widespread fibrosis irregularly following the portal ramifications leading to an attenuation of hepatic folia, and absence of insular pseudolobulation and biliary distension of the bile ducts are some of the important features in uncomplicated cases.

In most cases the history of the onset was preceded by dysenteric attacks or by fever of 8–14 days' duration, suggestive of paratyphoid fever, and the author concludes that bacillary dysentery and probably paratyphoid fever are significant aetiological factors. [There is no mention of any attempts which may have been made to determine, for example by agglutination reactions, whether these patients had been infected with paratyphoid.] Some of these patients also gave a history of intermittent ague-like attacks of fever; the author excludes malaria as the cause of this fever, for one reason by "the absence of malarial parasites in the blood clinically" [but as the patients "gave a history" of fever it is not clear when the examinations were made.]

The disease was slowly progressive and patients rarely survived more than 2 years after the onset of jaundice. The clinical picture was so characteristic that the diagnosis was not difficult but as no treatment brought any benefit the prognosis was hopeless.

Other Forms of Fibrosis of the Liver.—(1) *Cardiac fibrosis.*—In three examples of this the author found the liver showed microscopically unequal and irregular scarring, rich in elastic fibres, around the divisions of the hepatic vein. The reticular framework of the sinusoidal capillaries around the central veins was disorganized as a result of the parenchymal atrophy due to chronic venous engorgement; condensation and sclerosis of the reticular framework were further stages in the development of the cardiac fibrosis, which is thus essentially a fibrosis replacement.

The parenchymal mantle showed no loss of pattern in the regenerated areas, which is in contra-distinction to the findings in portal and toxic cirrhoses.

(2) *Syphilitic sclerosis.*—In spite of the high incidence of syphilis no typical manifestations of syphilis were seen ; one case of late congenital syphilis was examined but the appearances were not typical.

(3) *Other types of fibrosis.*—Examples of fibrosis associated with tuberculosis, schistosomiasis, or hepato-lenticular degeneration were not seen.

The Causation of Ascites in Northern Circars.—An enquiry into this was undertaken on account of the prevailing view that " commonest form of ascites in India is not due to cirrhosis of the liver but to a fibrosis of the peritoneum resulting from irritation of the peritoneum by the toxins of the bacilli of dysentery." The author disagrees with this and concludes that decompensated cardiac disease and hepatic cirrhosis are the most common causes of ascites in the Northern Circars.

Cirrhosis of the Liver and Splenomegaly.—Cirrhosis of the liver was one of the commonest causes of splenic enlargement which falls into two groups ; in one the enlargement of the spleen is moderate and can be accounted for by the chronic venous congestion, in the other the enlargement is marked and cannot definitely be explained, but the author suggests that it may be the result of a hyperplastic reaction due to toxins circulating in the blood consequent on an impairment of the detoxicating function of the liver.

Metabolic disturbances in Cirrhosis of the Liver.—After recapitulating standard physiological knowledge of liver function the author summarizes his own investigations in cirrhosis which showed :—

(1) Fasting hypoglycaemia due to a reduction in the true glucose content of the blood, and intolerance for glucose, and in some cases, for laevulose and galactose ;

(2) No significant changes in the protein metabolism ;

(3) Diminished cholesterol content of the plasma ;

(4) Latent bilirubinaemia, urobilinuria and occasionally bile salts and bile pigments in urine ;

(5) Delayed coagulation of the blood and diminished fragility of the red blood cells, and

(6) Retention of the Rose Bengal dye after intravenous injection.

He concludes that these disturbances of metabolism are not specific for this disease.

Hepatic Function Tests & Cirrhosis of the Liver.—The author concludes that :—

(1) The Rose Bengal dye excretion test is reliable in the diagnosis of hepatic disorders ;

(2) The laevulose tolerance test cannot be regarded as a reliable diagnostic aid in the study of hepatic diseases ;

(3) The galactose tolerance test is useful in the differential diagnosis of cases of early jaundice ; but in chronic hepatic disorders the test appears to be unsatisfactory. Following the ingestion of galactose, the blood sugar concentration appears to be more reliable than the urinary concentration of galactose in the diagnosis of hepatic disorders ;

(4) Clinically, the van den Bergh reaction is of very little value in the differential diagnosis of jaundice. Apart from an indication of the extent of impairment of biliary excretion, the test is of little practical importance as an hepatic efficiency test. In the absence of haemolytic disease, an increased concentration of bilirubin in blood is suggestive of hepatic dysfunction ; and

(5) The Widal's haemoclastic crisis is of doubtful value in the diagnosis of hepatic disorders.

With the exception of the Rose Bengal dye excretion test, the hepatic function tests gave variable results in cases of cirrhosis of the liver. Hepatic function tests do not permit quantitative estimations of liver function and single tests may be misleading on account of the dissociation of hepatic function in disease.

Cirrhosis of the Liver Following Chronic Intoxication with Carbon Tetrachloride: An experimental study.—Repeated administration of small doses (0·1 cc. to 0·2 cc. once or twice weekly) of carbon tetrachloride subcutaneously to albino rats produced toxic cirrhosis. The fibrous tissue was mainly distributed around the hepatic venous tree, which showed sclerotic changes in its larger divisions; its genesis in the cirrhosis thereby induced was traced to a disorganization, collapse, condensation and sclerosis of the peri-sinusoidal reticulum around the hepatic terminals, consequent on a necrosis of the parenchyma in the same area. *F. Murgatroyd.*

SAMBUC (Edouard). Anatomie pathologique du béribéri jugée par des autopsies faites en Cochinchine. [**The Pathological Anatomy of Beriberi.**]—*Rev. Méd. et Hyg. Trop.* 1937. May–June & July–Aug. Vol. 29. Nos. 3 & 4. pp. 129–150; 207–229.

This long article deals only with the macroscopic, naked-eye changes seen in fifty-two autopsies made on beriberi patients in Cochin-China. The findings in each case are detailed and the author then proceeds to analyse the conditions observed. Of the total 41 died in an acute cardiac crisis, 10 from other or intercurrent disease and one committed suicide. Of the 10 with other diseases four died from tuberculosis, pulmonary and visceral, two from uraemia, two from bronchopneumonia, one from aortic regurgitation and one of cancer of stomach and liver. Half the patients were in their third and fourth decades, 12 between 20 and 30 years and 14 between 30 and 40 years; 46 were men, 6 were women, three of them post-partum cases. In 29 there was no oedema, in 22 it was localized and in one general; 16 showed pleural effusion; 46 had pericardial effusion, 40 of them less than 500 cc. The heart was enlarged, weighing 250–350 gm. in 20 of the subjects; very large, 350–550 gm., in 21, eighteen of whom died with a cardiac crisis; and 9 had enormous hearts of over 550 gm. Ascites was present in 18; one litre of fluid in three, but as much as 8 litres in one case.

As regards the different organs, changes were most noticeable in the heart, liver, kidneys and adrenals, and particularly the heart. The author considers great dilatation of the right auricle as, by itself, almost pathognomonic; pericarditis with effusion is very common. He has nothing to say of the myocardium except that more study is required. Changes in the liver are mainly congestive—nutmeg liver—with parenchymatous hepatitis and in chronic cases cirrhosis, hypertrophic or atrophic. The kidneys may be merely congested or show actual glomerular nephritis with lobulation. The adrenals call for further study, "it is probable," says the author, "that all the endocrine glands are affected in some degree, more or less."

H. H. S.

GIROLAMI (Mario). I progressi della patologia tropicale in Italia durante l'Era Fascista. [**The Progress in Tropical Pathology in Italy.**]—*Arch. Ital. Sci. Med. Colon. e Parassit.* 1937. Nov. & Dec. Vol. 18. Nos. 11 & 12. pp. 667–700; 722–764 & 1938. Jan. Vol. 19. No. 1. pp. 31–57.

FENG (Lan-Chou). **A Critical Review of Literature regarding the Records of Mosquitoes in China. Part I. Subfamily Culicinae, Tribe Anophelini. Part II. Subfamily Culicinae, Tribes Megarhinini and Culicini.**—Reprinted from *Peking Natural History Bull.* 1938. Mar. & June. Vol. 12. Parts 3 & 4. pp. 169–181; 285–318. [117 refs.]

The author presents a compendious review of our present knowledge of Chinese mosquitoes.

It is only within very recent years that a general knowledge of the mosquitoes of China has been acquired, and the present paper is a valuable statement of what is at the moment known. The author gives a list of the mosquitoes recorded from China, recording under each its geographical distribution within China, the type of breeding place and the habits of the adults. Relation of species to malaria and filariasis is dealt with shortly. The author has also carried out the thankless task of tabulating those records which should be regarded as erroneous.

According to present knowledge the mosquito fauna of China consists of 98 species, 24 of which are members of the genus *Anopheles*.

P. A. Buxton.

MATHIS (Maurice). Élevage en série (cinq générations) d'un Stegomyia de Java: *Aëdes annandalei* Theobald. [**The Rearing of Five Successive Generations of a Javan Mosquito.**]—*Bull. Soc. Path. Exot.* 1938. June 8. Vol. 31. No. 6. pp. 493–497.

The insect occurs in India and the East Indies and bites man in forests, though it does not enter houses. The author has reared it in Paris and gives information about the biology as observed there. It appears that, as might be expected in a forest insect, the adult can only live if the atmospheric humidity is exceedingly high.

P. A. B.

THOMSON (R. C. Muirhead). **The Reactions of Mosquitoes to Temperature and Humidity.**—*Bull. Entom Res.* 1938. July. Vol. 29. Pt. 2. pp. 125–140. With 6 figs. [18 refs.]

If one observes the resting places of mosquitoes it is difficult to know whether their choice depends on temperature, humidity, light, smell, or a combination of several of these. With this in mind the author has devised and carried out analytical experiments in which single factors were isolated, and has made a considerable advance in interpreting the actions of wild mosquitoes.

In experimenting with humidity the "choice chamber" devised by Gunn and Kennedy was used. It is simple, physically sound and capable of adaptation to a wide range of problems. It consists essentially of a flat glass dish in which it is possible to provide a gradient of humidity at one temperature. The insects are introduced into it and observations made of their movements and the position at which they come to rest.

Thomson has worked with *Culex fatigans* and finds that the nutritional state in females makes a considerable difference to the insect's reaction, a point of some importance. In one set of experiments he made use of females which had fed successfully on canary the night before. They were indifferent to humidity over most of the scale, even if the humidity on the two sides of the chamber was widely different, for instance 50 and 90 per cent. But they avoided humidities of 95 per cent. and over, and at this part of the scale were so sensitive that they could distinguish 1 per cent. over a distance of 20 cm. On the very low part of the humidity scale they have some perception and will settle rather at 60 per cent. than at 10 per cent.

There is some evidence that the insects' behaviour in moist air is determined rather by perception of relative humidity than of saturation deficiency. The author points out an apparent anomaly, that the female avoids very high humidities (and even hungry females do this) though it is at the highest humidities that life is longest.

Turning to the study of temperature, the author makes valid objections to certain previously published observations, in which the fact that a difference in temperature invariably makes a difference in humidity has not been perceived. It is only now, after it has been shown that the insect is indifferent to humidity over the middle part of the scale, that it becomes legitimate to make use of this range of humidity in offering a choice of temperatures. The female *Culex* is extremely sensitive to temperature near the upper limit of what suits it and can perceive a difference of 1°C. over a space of 20 cm. The upper temperature limit is greatly affected by the insect's nutritional state. Temperatures below 15°C. are avoided but the reaction is not very sharp, partly at least because the insect is somewhat inactive.

There is, therefore, a contrast between the insect's reaction to humidity and to temperature. If it is offered a choice between a moderate and a very high humidity it may fly from the drier to the moister part of the dish and then turn round so as to avoid the moist area; but if it settles in the moist area there is no particular tendency to move. On the other hand, if the contrast is between moderate and high temperature, the female will avoid the high temperature; moreover if she settles there she will be more active and will therefore move about; this in itself, even if her movements are random, will tend to her eventually settling in the cooler part of the chamber. One may say, therefore, that in both cases there is an avoiding reaction or phobotaxis, but at high temperatures there is also a tendency for movement to be increased, *i.e.*, a kinesis.

The experiments, essentially simple and well planned, provide a considerable and solid advance in our understanding.

P. A. B.

BRETT (G. A.). **On the Relative Attractiveness to *Aëdes aegypti* of Certain Coloured Cloths.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. June 25. Vol. 32. No. 1. pp. 113–124. With 1 fig. [12 refs.]

The experiments are designed to tell us whether *Aëdes aegypti* alights more frequently on cloth of one colour than another and if so whether its behaviour is influenced by the brightness or the colour of the stuff.

The coloured cloths were stretched over the experimenter's hand, a space preventing the insects taking blood. In each group of experiments two pieces of cloth were sewn together, so that work was done with the colour and white (in equal areas) and then with the same colour and black. Investigations were carried out in diffuse daylight with female mosquitoes a few days old which had not had a blood feed. The details of procedure were well thought out, fully recorded and statistically treated. The colours employed are specified by trichromatic coefficients. These, being numerical, have been compared statistically with numbers of insects alighting.

One may select a single experiment to show the type of result obtained. The black cloth reflected 2 per cent of light, the khaki 14·8, the white 55·6. The percentages alighting when a single choice was offered were khaki 31·7, black 68·3, or khaki 60·4, white 39·6, several thousand alightings being recorded. Such an experiment shows that the insect's choice is a long way from absolute, and that the darker of the two materials seems to be "preferred."

Working in this way, and using black, white and 9 colours (each of which is offered to the insect with black and also with white as an alternative), the author can arrange his colours in an order of attractiveness. Roughly speaking, the cloths which reflect less light are those on which the insect alights more frequently. But light khaki (reflecting 40·3 per cent.) receives fewer visits than white (reflecting 55·6 per cent.), and the difference is significant. Moreover, the order of attractiveness with black and with white as alternatives are different in several points.

The experiments lead one to the conclusion that though the brightness of the cloth is important, the insects have also a definite reaction to colour. They "preferred" the particular red which was used, though it reflected more light than several other colours; and they avoided the light khaki, as already mentioned. *P. A. B.*

YOELI (M.) & MER (G. G.). **The Relation of Blood Feeds to the Maturation of Ova in** *Anopheles elutus*.—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1938. Jan. 25. Vol. 31. No. 4. pp. 437–444.

Blood contains a factor, associated with the proteins of serum and cell stroma, which is necessary for the complete maturation of the eggs. Females of *Anopheles elutus* fed with sugar or fruit juices will develop the ovary only as far as the stage II of Christophers. If fed with haemoglobin from laked blood corpuscles, the same stage of development is reached. But if fed with suspended red corpuscles, or with serum, after the attainment of stage II, complete development takes place. The necessary factor thus occurs in the cell stroma and in cell-free serum. It is not destroyed by heating for one hour at 100°C.; in coagulated serum it is associated with the coagulum; and it is not extracted by lipoid solvents. It is not clear whether it is in the nature of an accessory substance, or whether the protein itself is exerting a specific action. *V. B. Wigglesworth.*

LEESON (H. S.). **The Mosquitos of the** *Funestus* **Series in East Africa.**—*Bull. Entom. Res.* 1937. Dec. Vol. 28. Pt. 4. pp. 587–603. With 4 figs. (1 map) & 2 plates. [16 refs.]

Of the members of the *funestus* group of Anophelines in East Africa only *funestus* type form appears to be an habitual house-frequenter.

The material on which this study is based was collected in Uganda, Tanganyika and in the islands of Zanzibar and Pemba during the period February to October. Members of the *funestus* series found were *A. funestus* Giles type form, *A. leesoni* Evans, *A. rivulorum* Leeson, and a new form *A. rivulorum* var. *garnhamellus* Evans and Leeson. The characters by which these forms can be distinguished in the larval and adult stages are given. They are most easily recognized in the larval stage. All these insects breed in similar situations: clear, shaded water with growing vegetation, particularly grass. All the adults captured were taken inside buildings, and of these almost all were *A. funestus*, the remaining few *A. rivulorum* and its variety. Precipitin tests showed the presence of human blood in 239 out of 456 of these; a very few contained ox blood. Out of 122 female *A. funestus* dissected 15 were infected in glands or stomach with malaria parasites.

It is well known that *A. funestus* larvae occur in shady water; *A. gambiae* in water exposed to the sun. The author made a quantitative estimation of this difference by measuring the light intensity in the breeding places with a photoelectric cell. When the illumination is expressed as a percentage of the total light available it is found that the majority of the *A. gambiae* occur at a level of 90–100 per cent. Whereas the peak of the *A. funestus* curve is at 10–20 per cent.

V. B. Wigglesworth.

KOMP (W. H. W.). **Notes on the Identification of** *Anopheles pseudopunctipennis* **Theobald (Diptera, Culicidae).**—Reprinted from *Proc. Entom. Soc. Washington.* 1937. June. Vol. 39. No. 6. pp. 157–163. With 2 plates. [10 refs.]

The author calls attention to a relatively conspicuous and most reliable character by which the larva of *Anopheles pseudopunctipennis* may be recognized even with a hand lens. On the back of the post-spiracular plate are two thin black processes which curve upwards and penetrate the surface film when the larva is alive. The character has been observed previously but overlooked by recent workers.

The paper also discusses the vexed question of the mesosome in the male genitalia. It appears that there is some variation in this structure and that it might have a geographical basis. *P. A. B.*

GORE (Ramkrishna N.). **A Modified Village Mosquito Trap.**—*Indian Med. Gaz.* 1937. Nov. Vol. 72. No. 11. 674–675. With 2 figs.

The author describes some improvements in detail for the mosquito trap previously devised (this *Bulletin*, 1937, Vol. 34, p. 263). During most of the year the mosquitoes are killed by exposure to the sun. In the monsoon they are stupefied with smouldering tobacco and then killed in the charcoal or dung cake fire. *V. B. Wigglesworth.*

SYDDIQ (M. M.). *Siphunculina funicola* **(Eye-Fly).**—*Indian Med. Gaz.* 1938. Jan. Vol. 73. No. 1. pp. 17–19. With 1 text fig. & 3 plates.

This is a preliminary account of an extensive study of the eye-fly and its allies. All stages in the life history are described, and photographs are given. The characteristic breeding place is moist mud, particularly that contaminated by decomposing organic matter. Damp, soiled

earth around pail latrines, badly kept cattle stables, and contaminated surface drains are typical examples. By painting a suspended electric light flex, on which the flies congregated in great numbers, with fluorescein, and then searching for this next morning in gutters and drains, it was proved that the flies will go at least 100 yards away for food or oviposition. The flies were often observed sucking serum from wounds and ulcers. Among the organisms isolated from culture media on which the flies were allowed to crawl were *Staphylococcus aureus*, non-haemolytic streptococci, enterococci and diphtheroids. A great reduction in the number of eye-flies in Hyderabad has taken place since all gutters, drains, etc., have been regularly sprayed with "Malariol" to destroy mosquito larvae. *V. B. Wigglesworth.*

MENG (Ch'ing-hua) & WINFIELD (Gerald F.). **Studies on the Control of Fecal-borne Diseases in North China. V. A Preliminary Study of the Density, Species Make Up, and Breeding Habits of the House Frequenting Fly Population of Tsinan, Shantung, China.**—*Chinese Med. Jl.* 1938. Mar. Supp. No. 2. pp. 463–486. With 3 figs.

The authors have brought together a large body of information about the species of domestic flies and their relative abundance at Tsinan, Shantung. The work was done as part of an investigation into the intestinal diseases of North China.

The authors had traps in a number of places and examined some thousands of flies caught in them. They also collected dung of animals and man and bred out and determined flies from it. Trapping was only commenced in August and discontinued at the end of the year, when no further adult flies were caught: it was found that the commoner flies were all more abundant in August than in later months, the commonest of all, *Chrysomyia megacephala*, disappearing in October and the species of *Musca* in December. *Chrysomyia* was bred from human faeces, but never from the manure of pig, cow or horse; *Musca sorbens* from the animals but not from man; *M. vicina* from all the animals and man. It is curious that flies were only bred from 18 out of 28 samples of material from human beings.

P. A. B.

VELLARD (J.). Arthropodes vésicants ou piqueurs, connus sous le nom de *Pitos* dans les Andes vénézuéliennes. [**Noxious Arthropods in the Venezuelan Andes.**]—*Bull. Soc. Path. Exot.* 1937. Dec. 8. Vol. 30. No. 10. pp. 878–884. With 6 figs. on 3 plates.

In the Cordillera of Mérida cases of vesication followed by ulceration resistant to treatment are fairly common and are ascribed to insects which go under the general name of *pitos*. This term includes insects which set up lesions by their sting or bite and also those which produce the lesions by contact. The former are the more numerous and belong to several groups: Ornithodorus, Rhodnius, Triatoma, Belostomidae and Nectonetidae, certain spiders, as *Lycosa raptoria*, and others.

Necrotising lesions are seen often in horses and mules; a hairy spider *Xenesthis* ?sp., but probably not *X. monstruosa*, attacks man. Among the vesicants acting by contact the Automeris is widespread. Lesions produced are not as a rule of serious import, and those reported as such are more often cases of leishmaniasis, or phagedaenic ulcers.

H. H. S.

STELLA (Emilia). Gli Ixodidi dell'Africa Orientale Italiana. [**Ticks in Italian East Africa.**]—*Riv. di Biol. Colon.* Rome. 1938. Apr. Vol. 1. No. 2. pp. 135–153. With 4 figs. [34 refs.] English summary (8 lines).

The author presents a summary of existing knowledge about the ticks which occur in Italian East Africa. The paper will be of considerable local value, particularly to veterinarians.

The introductory part of the paper calls attention to the veterinary and medical importance of ticks. Surely the author is in error in speaking of tick-carried relapsing fever as " widely spread in the whole of Africa " ? After giving keys to genera, not species, full details are given about ticks known to occur in different parts of the Italian territories and in surrounding countries. It appears that the relevant literature has been carefully searched. The paper concludes with a table showing the distribution of 34 species of ticks among 8 colonies and territories. It appears that *Ornithodorus moubata* is recorded from Eritrea and Italian Somaliland : *O. savignyi* from both the above and also from British and French Somaliland. *P. A. B.*

ROBERTS (J. I.). **The Control of Bed-Bugs in Railway Coaching Stock by Regular HCN Fumigation.**—*East African Med. Jl.* 1938. Feb. Vol. 14. No. 11. pp. 354–360. [Summary appears also in *Bulletin of Hygiene.*]

Fumigation of railway coaches against bed-bugs must be frequent and regular in hot countries, and in Kenya and Uganda it is necessary to use a very rapid method, due to demands on the rolling stock. Thus special precautions to ensure that coaches are air-tight are not practicable. Cyanide appeared to be the most rapid method and the quantities and times of exposure were found from tests on bugs secreted in muslin bags or plugged test tubes in hidden places in the coaches.

Zyklon is much used, at the rate of 8 oz. to a 4-berth compartment with an additional 4 oz. for lavatories, corridors and bedding-cupboards. Not less than 2 hours' fumigation is necessary, and this is followed by 2 hours' ventilation and then 15 minutes with the coach in motion. With tests supplied and recommended by the firms making the fumigant no gas was found after this time. Among many precautions the author recommends the draining of water from the drinking water filters ; fumigation should always be done on sidings well away from station premises. Nothing is said about the importance of removing bedding or mattresses before cyanide fumigation and disinfesting them by heat or steam, or at least giving them a separate airing. However, during the 4 years of operation no accidents have occurred and disinfestation has been satisfactory.

Cellophite (paper discs impregnated with liquid HCN) is recommended for the rapidity with which it can be handled, since in hot parts operators should be exposed to the gas for the shortest possible period. The whole process is incidentally thereby hastened and cellophite is cheap. One disc is used to a 4-berth compartment. Two years' use have proved it to be satisfactory.

SO_2 is unsuitable for this type of work. It is expensive, tarnishes brass fittings, requires 24 hours' exposure and the machines break down frequently.

The relative costs of fumigation per coach are Zyklon Shs. 5/70: cellophite Shs. 2/70: SO_2 Shs. 22/50. *C. G. Johnson.*

OMORI (Nanzaburo). **Experimental Studies on the Influence of Low Temperatures upon the Tropical Bed-Bug** (*Cimex hemipterus* **Fabricius). Fourth Report. On the Influence of a Temperature of 0°C.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1938. June. Vol. 37. No. 6 (399). [In Japanese pp. 1004–1013. English summary pp. 1014–1015.]

This is the author's fourth report on the influence of low temperatures on *Cimex hemipterus*, the tropical bed-bug. It deals with the longevity of eggs, nymphs and adults at 0°C. After bugs were bred and eggs laid at 27°C. and 75 per cent. relative humidity the experimental material was placed at 0°C. and 60–100 per cent. R.H.; then after periods of 7, 14 and 21 days, replaced at 27° or at room temperature so as to ascertain the number of survivors.

Eggs after a 7-day exposure survived to develop but for only 1 in 20 to hatch when replaced at 27°C., while after 14 days at 0°C. neither development nor hatching occurred at 27°. No mention of controls is made in the author's summary.

When instars I–V and adult males and females, fed and unfed, were subjected to 0°C. only a few fed adults and first instars survived a 7-day exposure. First instars were the most resistant stage, although the author had found them to be the least resistant at 3°, 6° and 9°C.; more unfed than fed first instars survived. Some adult males remained normal and virile after 7 days at 0°C., while none was alive after 14 days. Two out of 14 laying females laid eggs subsequent to a 7-day exposure, and the author concluded that the spermatozoa were, therefore, still functionable. Since in bed-bugs, however, eggs are fertilized while still in the ovarioles, it may be that if such fertilized eggs survived, even if free sperms in the body cavity perished, the same result would have been obtained. *C. G. Johnson.*

CALDWELL (A. F.). **A Note on the Chemistry and Preparation of Insect Sprays containing Pyrethrum.**—*Jl. Malaya Branch Brit. Med. Assoc.* 1938. Mar. Vol. 1. No. 4. pp. 336–341. [16 refs.] [Summary appears also in *Bulletin of Hygiene.*]

The author is particularly interested in the problem of killing mosquitoes in aeroplanes. The paper deals principally with sprays containing pyrethrum.

In the short section devoted to fumigation the view is expressed that fumigation is not a satisfactory method of destroying mosquitoes; surely this is not in accordance with general experience? The author then passes to sprays, of which one type is a watery solution or emulsion of Derris, pyrethrum, etc. [Perhaps these watery sprays deserve more attention than they receive here, for with them there is no danger of fire.] The second type of spray has a basis of kerosene with the addition of phenol, orthodichlorbenzene, essential oils, etc. The third type consists of pyrethrum extract in kerosene with or without the addition of some perfume.

A short account is given of the properties of the pyrethrins, the two insecticidal substances which occur in the flowers of pyrethrum. The author recommends that the powdered drug should be assayed (the method being given) and that it should not be used unless the pyrethrins

exceed 0·5 per cent. This drug is then percolated cold with kerosene and diluted to contain 0·075 per cent. pyrethrins. The risk of fire with this spray is very little and may be reduced by substituting carbon tetrachloride for half of the kerosene if sufficient pressure is available to spray this more dense solution. No information is given on the size of the droplet which is desirable or on any tests on mosquitoes which may have been performed. *P. A. B.*

CRAUFURD-BENSON (H. J.). **An Improved Method for testing Liquid Contact Insecticides in the Laboratory.**—*Bull. Entom. Res.* 1938. Mar. Vol. 29. Pt. 1. pp. 41–56. With 7 figs. & 1 plate. [15 refs.]

This paper describes a method for testing contact insecticides, and data are published to show the necessity for rigid control of variables before, during and after dosage. The disadvantages of previous methods are discussed.

The author chooses an immersion technique and considers that the risk of stomach poisoning is outweighed by advantages such as equal degrees of treatment, possibility of good temperature control during application, the use of large numbers of insects and the independence of the method on their activity. The work deals exclusively with the effect of a suspension of derris resin in water (with emulsifier) on the beetle *Ahasverus* (*Cathartus*) *advena*. The technique of dipping which ensures a minimum of handling (an important factor in eliminating errors due to removal of insecticide after application) is described in detail. Draining is rigidly standardized and the insects considered to be dead if they show no movement when placed 6 in. from an electric light.

Great stress is laid on the necessity for controlling temperature and humidity before and after immersion and for keeping the insects with constant access to food before the experiment under conditions resembling those occurring in nature.

Insects starved for 24 hours before dipping gave more consistent results than those used immediately on removal from food. The effect of the insecticide on mortality was considered 24 hours after dipping, by which time the mortality rate had passed its initial rapid phase of the 4 hours immediately following treatment. The 48 hours without food does not introduce an appreciable error due to starvation provided that the insects were not more than 20 days old when dipped. From the 20th day the mortality from treatment is correlated with mortality due to starvation alone, but before this time the insecticide produces a high mortality not shown with starved, untreated insects: this, in the author's opinion, may be due to the unhardened state of the cuticle.

Temperature is considered to be the most important factor to control and 25°C. was maintained before, during and after dipping. At immersion temperatures below 25°C. there is a rapid decrease in mortality, and insects bred at 20°C. had a greater resistance to the insecticide than those bred at 25°C.

The author claims that the results are more accurate than any hitherto published on aqueous insecticides and that, unlike some other methods, they are repeatable from day to day and with different persons. This he considers to be due to the rigid standardization of variables before and during the experiment. *C. G. Johnson.*

BEEMAN (Joseph A.) & HUNTER (Warren C.). **Fatal Nicotine Poisoning. A Report of Twenty-Four Cases.**—*Arch. Pathology.* 1937. Oct. Vol. 24. No. 4. pp. 481–485. [12 refs.]

Nicotine ranks fourth among the poisons responsible for accidental, homicidal and suicidal deaths in Portland, U.S.A. The ready availability of insecticides containing nicotine is chiefly responsible for this. Twenty-four cases are here described, mostly suicides, in which death was caused, generally within ten minutes, by drinking Black Leaf 40, a commercial insecticide containing 40 per cent. of nicotine sulphate.

V. B. Wigglesworth.

BUXTON (P. A.). **Studies on Populations of Head-Lice** (*Pediculus humanus capitis*: **Anoplura**). **II.**—*Parasitology.* 1938. Jan. Vol. 30. No. 1. pp. 85–110. With 2 figs. [14 refs.]

This is the continuation of a study already noted (this *Bulletin*, 1936, Vol. 33, p. 637) in which the numbers of head-lice occurring naturally on different individuals have been estimated by dissolving a complete crop of hair and counting the residual lice. It is important that the entire head should be shaved if true figures are to be obtained by this method. More than 2,000 crops of hair collected from Nigeria (Sokoto), Kenya (Nairobi and Kakamega), Ceylon (Colombo) and Palestine (Jerusalem) have been examined, and the incidence and degree of infestation correlated with race, sex, age, quantity of hair and season.

The great bulk of the infestations are very slight (from 1–10 lice per individual). Where the proportion of people infested is large the mean number of lice per individual is increased. With few exceptions, lice increased in number in the cooler, wet season; but it is uncertain whether this is a direct effect of climate on the insect or the reflection of the altered habits of the host. Longer hair is generally associated with larger infestations. But the most striking relation is that with age. In all localities the younger age groups show the greatest number of infestations. For instance, at Sokoto there were 20 per cent. of infestations for 6–10 years, 11 per cent. for 11 to 20 years, only 4 per cent. at 21 years and upwards. *V. B. Wigglesworth.*

IOFF (I. G.) & TIFLOV (V. E.). Help in the Determination of the Fleas (Aphaniptera) of the South-Eastern European Parts of the U.S.S.R. —116 pp. With 157 figs. 1938. Saratov Provincial Publishing Office.

COMANDON (J.) & DE FONBRUNE (P.). La chambre à huile. Ses avantages pour l'étude des micro-organismes vivants, la culture des tissus et la micromanipulation. [**Oil Chamber for Study of Living Microorganisms, Tissue Culture and Micromanipulation.**]—*Ann. Inst. Pasteur.* 1938. Feb. Vol. 60. No. 2. pp. 113–141. With 13 figs. & 4 double plates. [21 refs.]

The paper describes a technique for the study of cells or other objects in what is termed an oil chamber. A small droplet of liquid paraffin is placed on a cover glass and a small quantity of the liquid containing the objects to be examined, spirochaetes, blood cells, amoebae, etc., is injected by means of a fine pipette inserted through the oil on to the cover glass so that it forms a drop between the paraffin

and the glass. The cells sink on to the surface of the cover glass and excess of fluid may be removed by a fine pipette. The cover glass is inverted and supported for microscopic examination, which can be conducted without danger of evaporation. By means of fine glass needles the cells can be manipulated as necessary. The method can also be employed as a means of tissue culture. *C. M. Wenyon.*

SHORTT (H. E.), PANDIT (S. R.), MENON (K. P.) & SWAMINATH (C. S.). **The Absence of Effective Immunity after Cure of Protozoal Infections.**—*Indian Jl. Med. Res.* 1938. Jan. Vol. 25. No. 3. pp. 763–777.

The authors describe a series of experiments directed to test the persistence of immunity in *Babesia canis* infections in dogs and *Plasmodium knowlesi* and *P. cynomolgi* infections in monkeys. Great care was taken to bring about by adequate treatment complete eradication of the infections in a number of animals. All known tests to prove the absence of parasites, including the inoculation of relatively large quantities of blood into clean animals, were used. The conclusion is reached that in the case of all these infections immunity is dependent upon the persistence of parasites in the body and where the infection has been entirely eliminated there is as marked a susceptibility to re-inoculation with the homologous strain of parasites as there was to the primary infection. The results obtained were not sufficient to enable conclusions to be drawn regarding the relative severity of primary and secondary attacks. *C. M. W.*

ARMAGHAN (Veronica) & MEDIARY (George C.). **A Survey of Intestinal Protozoa and Effect of Aldarsone on *Giardia* and Other Intestinal Protozoa of Man.**—*Amer. Jl. Hyg.* 1938. Mar. Vol. 27. No. 2. pp. 250–257.

Aldarsone (3-amino-4-hydroxy-phenyl-arsonic acid) has been used successfully by the authors for freeing rats and mice of lamblia infection. It seemed desirable to test its action on this infection in man. A number of cases which came to light during an intestinal protozoal survey amongst the inmates of an institution for the feeble-minded were utilized for the purpose. Judging from an observation period of 12 days after treatment of 30 cases, the drug was effective in 65 per cent. of lamblia infections, 100 per cent. of *E. coli*, *C. mesnili*, *E. nana* and *I. bütschlii* infections, and in 86 per cent. and 33 per cent. of *T. hominis* and *E. histolytica* infections respectively. The best dosage appeared to be 500 milligrams at bedtime on one day, followed by four doses of 250 milligrams on each of the next two days. The results seem to indicate that further trials of the drug are desirable. *C. M. W.*

BONNIN (Henri). La résistance des protozoaires et des protozooses aux médicaments. [**Drug-resistant Protozoa and Protozoal Diseases.**]—*Gaz. hebd. Sci. Méd. de Bordeaux.* 1938. Jan. 23. Vol. 59. No. 4. pp. 51–53.

The author advocates the treatment of protozoal infections by a combination of two or more drugs, each drug being given in a dose

which employed alone would be insufficient to influence the parasite. The combined action of more than one drug would avoid the danger of production of resistant strains of an organism. *C. M. W.*

HOLLANDE (André). Les amibes du type limax, dans leurs rapports avec les flagellés. [**Amoebae of the " Limax " Type considered as Flagellates.**]—*C. R. Acad. Sci.* 1937. Dec. 27. Vol. 205. No. 26. pp. 1439–1441.

It is well known that certain free-living amoebae of the " limax " type, which may be cultivated on suitable media, are able at times to develop flagella and behave as flagellates. Of these there are three types, which differ in the number of flagella—two, three or four. It has generally been supposed that the flagellate stages serve merely for distribution of the amoebae and that reproduction occurs only in the amoeboid stage. Working with an amoeba which produces four flagella (*Tetramitus*) the author finds that reproduction may occur at any stage of development and that the protozoon is actually a flagellate and not an amoeba. The other forms also are to be regarded as flagellates, and the author believes that they should be grouped together in one family, the Vahlkampfidae, amongst the Protomastigina (Order Protomonodida of the Class Mastigophora).

C. M. W.

WICHTERMAN (Ralph). **The Present State of Knowledge concerning the Existence of Species of** *Nyctotherus* **(Ciliata) living in Man.**—*Amer. Jl. Trop. Med.* 1938. Jan. Vol. 18. No. 1. pp. 67–76. With 5 figs. on 1 plate. [28 refs.]

Four representatives of the genus *Nyctotherus* have been recorded as ciliate parasites of the human intestine. These are *N. faba* Jacoby and Schaudinn, 1899, *N. africanus* Castellani, 1905, *N. giganteus* (Krause, 1906) and *N.* sp., Monier and Dang-teh-Trinh, 1932. Some of these have been recorded by other observers since their original descriptions. The author of the present paper reviews the various records and with ample justification arrives at the conclusion that all the records are fallacious, and that, quite apart from the question as to whether the parasites observed were actual parasites and not coprozoic organisms, they did not possess the characters of members of the genus *Nyctotherus* such as *N. cardiformis*, a common intestinal parasite of the frog and the type species of the genus. The author reaches the conclusion that species of *Nyctotherus* are not truly entozoic parasites of man or indeed of any warm-blooded animal. *C. M. W.*

MORIOKA (Koichi). **Experimental Studies on the Biological Behaviours of** *Trichomonas hominis* **(Davaine, 1860). Part II. Multiplication and Vitality of** *Trichomonas hominis* **in Various Culture Media.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1938. Mar. Vol. 37. No. 3 (396). [In Japanese pp. 504–513. [11 refs.] English summary p. 514.]

Cultivation of *Trichomonas hominis* was attempted in a number of different media and it was found that that of Tanabe, which did not encourage overgrowth with bacteria, was the best. *C. M. W.*

TOBIAS (José W.) & NIÑO (Flavio L.). Estudio de una nueva observación de granuloma paracoccidioídico. (Forma linfático-visceral.) [**A Case of Paracoccidioidal Granuloma (Lymphatico-visceral Form).**]—*Prensa Méd. Argentina.* 1938. Feb. 2 & 9. Vol. 25. Nos. 5 & 6. pp. 232–243; 286–301. With 67 figs. & 2 charts.

The case described is a fatal one of generalized blastomycosis of the systemic lymphatic glands—axillary, inguinal, crural and abdominal—together with splenomegaly and involvement of the whole of the gastro-intestinal tract, producing ulcerative and granulomatous lesions. The diagnosis was effected by the discovery of the organism, *Paracoccidioides brasiliensis*, in an excised lymphatic gland. Infection was produced in the guineapig by intratesticular inoculation, while cultures were obtained on Sabouraud's medium. No treatment was of any avail. *C. M. W.*

BLACKLOCK (D. B.). **Presidential Address on Housing in the Tropics.**—*Jl. Roy. San. Inst.* 1937. Nov. Vol. 58. No. 5. pp. 296–303. With 2 figs. [Summary appears also in *Bulletin of Hygiene.*]

This address was delivered in the section of Tropical Hygiene at the Health Congress of the Royal Sanitary Institute at Birmingham in July 1937.

Tropical housing is a subject which deserves more attention and investigation than it has hitherto received. Important considerations such as choice of site and orientation as regards sun and wind remain undecided, as also do such questions as materials and design and the application of new methods in ventilation and air-conditioning.

Comfort in housing should at least include health factors. Essential considerations are the choice of site and the use of materials which will exclude as far as possible known vectors of human diseases. In Great Britain the word "vermin" in regard to housing usually refers to bugs, but in the tropics *Cimex*, though commonly found, is of far less importance than many other arthropods.

House diseases may be prevented by a proper selection of site and materials, but much more than this is needed to secure comfort. Coolness may be obtained by an all-metal house such as the Nissen hut with an outer roof and verandah of thatch.

The address concludes with a summary of the standards of over-crowding laid down in Great Britain by the Housing Act, 1936, and these are compared with those of the Standard Oil Company, and in Malaya and the Rand Mines. The author considers that a minimum floor space of 60 square feet per person, including children, for workers' houses in the tropics is a reasonable one.

The address was illustrated by a display in the Health Exhibition of photographs, plans and models of housing in a number of tropical colonies. *W. H. Peacock.*

ANDERSON (R. E.). **The Housing of Estate Coolies.**—*Jl. Malaya Branch Brit. Med. Assoc.* 1937. Dec. Vol. 1. No. 3. pp. 268–274. With 1 fig. [Summary appears also in *Bulletin of Hygiene.*]

When Malaya was being opened up most of the coolies were unmarried and a barrack type of line and a communal life were most suitable. With development and stabilization they brought their families with them. This necessitated the provision of individual or

semi-detached dwellings. Back-to-back lines are to be condemned and there should not be more than twelve rooms in a line. The cottage type is to be preferred. The size of room recommended is 12 ft. × 10 ft. with a minimum height of 10 ft. and this should accommodate three adults or a married couple with two children. It is usual to insist on window space equivalent to one-tenth of the floor-space. As windows are apt to be kept shut, fixed louvres or similar devices are necessary. Verandahs should not be enclosed.

For roofing material tiles are good but expensive. Corrugated iron is suitable if ceilings are provided. The use of aluminium foil as a heat insulator would give excellent results.

In the subsequent discussion the Controller of Labour preferred private plots to an open housing area, for which no individual could be held responsible. He recommended a semi-detached building with front and back verandah and a room 12 ft. × 16 ft. divided by a movable screen.

Dr. B. Barrowman said that in certain areas there was a definite association between concrete floors and increased tuberculosis rates. Unless there were damp-proofed dwarf walls concrete did not prevent the damp rising.

Estate housing should have a life of not more than fifteen to twenty years. New designs could then conform to new and better standards. Expensive permanent houses were to be deprecated for this reason.

W. H. Peacock.

Couto e Silva (O. B.). Nota sôbre a proteção da pele contra a luz solar pela pintura com Urucú (*Bixa orellana*). [**Protection against Sunlight by painting with** *Bixa orellana.*]—*Arquivos de Hig.* 1937. Nov. Vol. 7. No. 2. pp. 243–245. With 2 graphs. English summary (8 lines).

In dogs exposed to direct sunlight the effect is shown by increased rate of respiration and in time by rise of temperature. In Brazil the Indians use annatto, locally "urucú," a dye prepared from *Bixa orellana*, for painting their bodies and this appears to reduce the effects of exposure to the sun's rays. The author exposed dogs to sunlight for periods up to an hour, recording the respiration rate and the rectal temperature. Fig. 1 is a graph of respiratory movements after 35 minutes' exposure. He then painted them with urucú and after exposure for close upon an hour, noted that the respiration rate was slower and there was less rise in temperature. Fig. 2 shows the result after exposure for 58 minutes, and the respiration rate is clearly much slower. It is suggested that experiments might be undertaken to test whether the painting of dwellings with urucú would reduce the temperature within and add to comfort in the tropics. *H. H. S.*

Sa (P.). **Study of Comfort Temperatures in Brazil. The Influence of Clothing.**—*Estudos sobre o conforto thermico e o conforto visual no Brasil. Instituto Nacional de Technologica (Ministerio do Trabalho, Industria e Commercio).* Rio de Janeiro. 1936. pp. 23–37. [Summary taken from *Dept. Scient. & Indust. Res. Building Science Abstracts.* 1938. Jan. Vol. 11. No. 1. pp. 31–32.]

"Using a Hill's kata-thermometer, measurements were made of the dry-bulb temperature with a bare bulb as well as with a bulb covered with different textile fabrics, it being assumed that the difference between the temperatures recorded by the bare and covered

bulbs would represent the degree of insulation provided by the fabric. It was found that the heat-insulating capacity of the materials is proportional to the kata temperature. The following values, in millicalories per cm.^{2} per second per kata degree, were obtained :— Linen (white), 0·4 ; Cambrai linen (white), 1·5 ; cotton (white) 1·6 ; silk (white and red), 1·8 ; wool (blue), 1·9. It was also found that the degree of insulation varied for each material, as any given material might show lower values than another at a low kata temperature and higher at a higher kata temperature."

BALFOUR (Margaret). **The Training of Nurses Overseas and for Overseas Service.**—*Health & Empire.* 1937. Dec. Vol. 12. No. 4. pp. 277–293.

The above paper was read by Dr. Balfour at the Imperial Social Hygiene Congress held in July 1937. It deals with the training and conditions of service of local nurses in India and in the British colonies and dependencies. The information upon which the report is based was derived from the replies to a questionary sent out to the governments and also to certain organizations responsible for hospitals in the various countries.

The enquiry was concerned with such subjects as legislation controlling the training and practice of nurses ; the standard of education demanded of candidates ; whether Preliminary Training schools existed ; whether Sister-Tutors or Home Sisters were employed ; the nature and length of the training being given ; and the steps being taken to enable nurses, after completing their training, to make satisfactory use of their knowledge. Suggestions were invited as regards future developments in the training and organization of nurses.

Dr. Balfour gives a résumé of the replies received and adds an interesting and useful commentary at the end of the report.

Common factors in the different countries which tend to retard the work are said to be, the poor standard of education of the pupil nurses, the different outlook as regards family customs and religious beliefs, and the lack of public opinion on the value and dignity of nursing.

To help to overcome these difficulties the employment of Home-Sisters and Sister-Tutors is considered necessary. Scholarships for locally trained nurses so that they could take post-certificate courses in England and grants to suitable hospitals to enable them to undertake the training of nurses are suggested.

Emphasis is laid on the importance of providing fair remuneration for trained nurses and of arranging satisfactory conditions of service after training ; it is recommended that special committees, on which the training-schools would be represented, should be appointed to deal with this important matter.

The author sums up : " Progress is needed in girls' education and more co-operation between educational and nursing authorities.

" More care is needed in the organization of the *training* of nurses, apart from their service in hospitals.

" The chief problems are how to develop in the pupil nurses a greater sense of responsibility and how to improve and safeguard their employment in the present conditions of society overseas."

The report is naturally difficult to summarize, being in itself mainly a summary, and it should be read in the original by all those interested in this matter. *M. G. Blacklock.*

CAMERON (J. A. P.). **Estimation of Age in Asiatic Girls.**—*Jl. Malaya Branch Brit. Med. Assoc.* 1938. June. Vol. 2. No. 1. pp. 19–23. With 12 figs. on 6 plates.

The question, so important in medico-legal proceedings, as to whether a girl is 14 years of age or more, cannot be answered correctly from the X-ray appearances of the bones in Asiatic girls in Penang. Mead's standard height-weight tables and the appearances of the teeth are not accurate, and the onset of menstruation, though fairly constant at 12 to 14 years, is not accurate enough for law. A clinical and X-ray investigation of 25 healthy Asiatic girls whose exact age was known from birth certificates led to the following conclusions :—

"From this small piece of investigation it would appear that 2 years on an average should be subtracted from the European standards of ossification in the case of Asiatic girls.

"If all the elbow epiphyses are ununited it is possible to say that an Asiatic girl is under fourteen years of age, but if all the elbow epiphyses are fused it is impossible to say accurately whether the age is under fourteen or not. One has to take into consideration physical and sexual development and make an allowance for Asiatic development.

"Onset of menstruation is a more accurate factor in age estimation than the height-weight factor but of course is not accurate enough for medico-legal purposes. When there appears to be an endocrine deficiency as in case 23, an X-ray plate is helpful in confirming the diagnosis."

Details of the age estimations by different methods are given, showing wide differences from the known actual age. *C. W.*

BASU (Sushil Kumar) & BASU (Sudhir). **The Age-Order of Epiphysial Union in Bengalee Girls. (A Preliminary Study.)**—*Jl. Indian Med. Assoc.* 1938. Aug. Vol. 7. No. 11. pp. 571–578. [23 refs.]

The work described in this paper was undertaken in view of the importance for medico-legal purposes of the estimation of the age of Indian girls. Table 22 shows the ages at which the epiphyses unite with the diaphyses in the case of the majority of Bengalee girls.

TABLE 22.

Epiphyses.	*Age (in years) of union in majority of Bengalee Girls.*
Proximal, humerus	16–17
Lateral epicondyle with shaft of humerus	12–13
Trochlea with shaft of humerus	12–13
Compound centre for lower epiphysis with shaft of humerus	12–13
Medial epicondyle of humerus	13–14
Proximal, radius	13–14
,, ulnar	13–14
Distal, radius	16–17
,, ulnar	16–17
Pisiform, centre present at	11 and upwards
Base, first metacarpal	14
Distal phalanx, thumb	13–14
Head, femur	13–14
Lesser trochanter, femur	13
Greater trochanter, femur	14
Distal, femur	16
Proximal, tibia	15–16
,, fibula	16–17
Distal, tibia	14–15
,, fibula	15
Apophysis, calcanous	14–15

The findings are based on the radiological examination of 130 girls, which entailed the taking of 1,300 skiagrams. The girls were chiefly from middle-class families living on a mixed diet and were in normal health. Careful scrutiny of birth records was made. The authors point out certain discrepancies between their findings and those of GALSTAUN, recently published.

[The figures in Table 22 are only majority figures.] Reference to the more detailed tables in the article shows that considerable variation in the time of union is observed. Table 17, for instance, shows that in the case of an individual person, an exact estimate is not possible.

TABLE 17.

Proximal Epiphysis of Tibia.

Age	No. of cases	No. of fusion	Percentage of fusion
9 ...	1	Nil	0
10 ...	2	Nil	0
11 ...	4	Nil	0
12 ...	10	Nil	0
13 ...	21	4	19·5
14 ...	24	12	50
15 ...	13	9	69·2
16 ...	18	17	94·4
17 ...	12	10	83·3
18 ...	3	3	100
19 ...	3	3	100

[See also CAMERON, above.]

TRÉFOUEL (J.). De la chimiothérapie anti-protozoaires à la chimiothérapie anti-bactérienne. [**From Antiprotozoal to Antibacterial Chemotherapy.**]—*Bull. Inst. Pasteur.* 1938. Apr. 30. Vol. 36. No. 8. pp. 385–410. With 1 fig.

The author indicates how chemotherapy in protozoal diseases had made advances long before success was achieved in bacterial diseases. Trypanosome infections in mice had allowed LIGNARD to experiment with arsenious acid in 1893. EHRLICH & SHIGA (1904) used dyes and found that trypan red alone of these killed the parasite and not the host. The latter discovery was a big step forward and the idea of a chemotherapeutic index and specificity of action took shape. EHRLICH established the formula for atoxyl already prepared, and showed how slight structural changes modified activity. The preparation of 606 followed in 1909. FOURNEAU has contributed much in this field and indicated many general rules regarding drug action. In antimony as well as in arsenic compounds there is a marked specificity of action, and it is shown also in Bayer 205, which is rendered inactive by the change in position of one methyl group. The latter was the first drug giving rise to immunity over a period of months. Bacterial chemotherapy had lagged behind due to lack of test methods with animals. MORGEROTH early used optochin against pneumococci. The introduction of Prontosil (and later Prontosil S) by DOMAGK in 1935 against streptococcal infection in mice marked a new era. He worked on the

idea of a basic dye with an azo grouping. Other workers had earlier almost reached the same goal but failed for lack of test methods.

The author and co-workers have obtained active compounds by the introduction of different substituents to the prontosil molecule. It seemed that prontosil might readily be broken down at the azo bond to its components in the body, and in fact paraaminophenylsulphonamide (F1162) isolated from the blood and urine after treatment with prontosil, proved as active as the original. It has been shown, moreover, that the triaminobenzene to which the drug could at the same time give rise, causes sensitization in the allergic phenomena following prontosil treatment in the guineapig. F1162 is structurally the same as atoxyl and stibamine, with a sulphur atom replacing As. and Sb. respectively. All variations of F1162 have proved less active than the original, and the sulphonamide group must be present for activity. Derivatives with the sulphur atom in different states of oxidation showed that sulphones are most effective. Definite advances in bacterial chemotherapy have resulted from the study of these sulphur compounds. Details of experiments with streptococcal infection in mice using F1162 and other compounds are given and the former is claimed as superior to prontosil. The results are supported by workers in other countries. F1162 has an action against the meningococcus, Type III pneumococcus, staphylococcus and in typhoid, aerytrycke, Pasteurella, tubercle, coli and gonococcal infections. Treatment of a gonococcal toxi-infection in mice has demonstrated the value of certain related sulphones and sulphoxides. Given by mouth, F1162 diffuses rapidly and its rate of elimination has been determined. It can readily be estimated colorimetrically in urine after diazotization and coupling with dimethylaminonaphthylamine, with which it gives a red violet colour. It increases markedly the bactericidal power of blood and body tissues and is active *in vitro* against moulds, streptococci, pneumococci, gonococci and meningococci. There is a striking parallel between its *in vivo* and *in vitro* activity. The azo derivatives of this compound are inactive *in vitro*, but addition of cysteine makes them active, like reduction in the body.

The body resistance lasts only when the drug is present and on elimination the animal is again subject to reinfection. The facts point to a direct action on bacteria by the drug, and the possible mechanism of such action is discussed. Splenectomy, blocking of the reticulo-endothelial system or avitaminosis do not prevent it from acting. A list of trade names and origins under which F1162 is known is given. *J. D. Fulton.*

GODART (Justin). Quelques observations faites au cours d'une mission aux Indes françaises et en Indochine. [**Observations made during a Mission to the French Indies and Indo-China.**]—*Bull. Acad. Méd.* 1938. Mar. 22. 102nd Year. 3rd Ser. Vol. 119. No. 12. pp. 342–347.

FINDLAY (G. M.). Immunization against Diseases in the Tropics.—Reprinted from *Practitioner.* 1937. Vol. 139. pp. 105–114. [38 refs.]

REVIEWS AND NOTICES.

EVANS (Alwen M.) [D.Sc. Manch.] **Mosquitoes of the Ethiopian Region. II.—Anophelini. Adults and Early Stages.**—pp. x+404. With 174 figs. [6 pages of refs.] 1938. London: British Museum (Natural History), Cromwell Road, S.W.7. [£1.]

It will be remembered that an extremely valuable series of monographs on the mosquitoes of Africa south of the Sahara is being published by the British Museum. The first volume, by Hopkins, dealt with the early stages of the Culicines (see this *Bulletin*, 1936, Vol. 33, p. 570); the second, dealing with the Anophelini, is now before us. It was only a few days before her death that the authoress came to London with the manuscript of this monograph, and her friends must draw what satisfaction they can from knowing that she brought her valuable work almost to completion. It remained for Dr. F. W. Edwards to insert a few paragraphs and the descriptions of three new species of *Anopheles*, which were included in a remarkable collection received by the British Museum from the Congo in 1937. But essentially the work is Miss Evans's, illustrated mainly with her drawings, the rather solid text occasionally lit up by a few unexpected words recording some personal recollection.

The general introduction includes a full, well illustrated account of the anatomy of the adult and early stages; this is extremely well done and concludes with practical notes on methods of making special examinations. The genus *Anopheles* is split up into a somewhat elaborate series of lesser units, subgenera, groups and sub-groups, which adds considerably to the reader's burden, particularly as some of the names, for instance *Myzomyia*, may indicate either a subgenus or a group. The writer must therefore continually explain the sense in which such a word is used. The procedure might, however, be justified on the ground that it makes the relation of the species to one another clearer. The book deals with 60 species and 21 varieties, and one observes that the larvae of all of these except 11 species and 5 varieties are known and described. This is remarkable, particularly as many of the species are only known from a single locality and a very few specimens (which, incidentally, makes it clear how much more work, even of a preliminary nature, is still necessary). The key to the adults is based on characters shown by the females; it includes page references to illustrations of some of the characters, an admirable point. There is also a short key to the adults of those species which are likely to occur in houses and a key to the known larvae, but none to the eggs. One important misprint has been detected, and the Editor asks us to call attention to it. In the key to adults on page 46, the figures 8 and 5 in the right margin should be transposed. This small error invalidates a considerable part of the key.

In the systematic part of the book the treatment of each species is full and very little has been omitted. After dealing with synonymy and the present location of the type the adult insect is described. A series of figures deals not only with external characters, but also with the pharynx and the terminalia of the male. Descriptions of early stages follow, several of them being here described for the first time. In the section devoted to the biology of each species an account is given of breeding places, the habits of the adult and its relation to

malaria. The geographical description is given in full, with many quotations from workers in the field; many old records which could not certainly be attributed to particular species (as now defined) have been discarded. In the section dealing with *Anopheles funestus*, *marshalli* and *rhodesiensis* a very full account of the synonymy and points of difference is given.

The book will be of great value to the Medical Officer of Health. With the general knowledge which he has probably acquired in a school of tropical medicine he will now be able to learn to distinguish his local species, both as adults and larvae. (Local keys would now be easy to make and would be very valuable for certain parts of Africa for which none is at present available). As to the two main transmitters of Africa, *gambiae* and *funestus*, the malariologist will find himself provided with very full information (30 pages or so). He will also find paragraphs which give "group characters" for larvae; using this it will at least be possible to say either that a particular larva is or is not that of *gambiae*, its precise identification if not *gambiae* being left vague. One should, however, remember that 5 or 6 other species are already known to transmit malaria in some part of Africa, and it is now no longer justifiable to assume that *gambiae* and *funestus* are the only important carriers. Experience in India in the last 20 years has surely taught us the need of determining, in each separate area, which species are actually transmitting.

The subject of control is not dealt with except in so far as it may be deduced from the biology of the species.

For reasons which we have just given the book will appeal to the specialist. The general zoologist might also find much of value in it. He is beginning to show increasing interest in "biological races" and other groups within the limits of species: modern intensive work on *Anopheles* produces a great deal which is of general interest. The well-informed zoologist will remark on the almost complete absence of any laboratory work of a modern kind. What has been done in the field seems to have set the stage for critical laboratory work which is at present lacking.

There can be no doubt that the volume before us will greatly facilitate work on the *Anopheles* of tropical Africa. For many years it will remain a standard work, and if it rapidly becomes out of date in matters of detail, that will be evidence of its stimulating effect on investigations in Africa. *P. A. Buxton.*

NEVEU-LEMAIRE (M.) [Professeur Agrégé des Facultés de Médecine]. **Traité d'entomologie : médicale et vétérinaire.** [Treatise on Entomology, Medical and Veterinary.]—pp. xxvii+1339. With 597 figs. 1938. Paris: Vigot Frères, Éditeurs, 23 Rue de l'École-de-Médecine. [Bound Fr. 280; Unbound Fr. 250.]

The writer of a book on medical and veterinary entomology may arrange his subject-matter in diverse ways. His plan may be comprehensive, including all insects which have any relation (even the remotest, rarest or most accidental) to medicine; or it may be eclectic, the author choosing to develop such parts of the subject as seem to him to be important or interesting. Moreover, the author's point of view might incline to medicine, or to zoology, and the zoologist's interest might be systematic or biological.

The author of the present book has preferred to be comprehensive and zoological; his arrangement is (mainly) systematic. After about a hundred pages dealing with general topics (parasitism in Arthropoda, arthropods which are venomous and those which have culinary or therapeutic value, etc.), he passes to a systematic discussion of the subject, dividing it by classes, orders, families and so forth. This occupies 1,100 pages. The book is concluded with a list of mammals and birds with their parasites, followed by a list of parasites (arranged taxonomically) and their arthropod hosts or vectors.

This arrangement gives the book certain definite merits. One can, for instance, at once turn up a list of ticks recorded from the African elephant, or find the name of the flea of the polecat, the louse of the yak, the bot of Chapman's zebra, or the feather mite of the ostrich. ("Veterinary Entomology" has been interpreted largely and generously). Similarly one may inform oneself, quickly and easily, that there are two records of spring-tails (Collembola) occurring in great numbers on the human skin, and one record of a child swallowing larvae of a skip-jack (a beetle of the family Elateridae).

There are, however, certain disadvantages in the author's plan. He has felt impelled to include a number of forms of life which are hardly relevant. For instance, half a page and a figure are given to the "water flea" (*Daphnia pulex*) on the ground that it is an intermediate host of certain worms occurring in ducks and swans; and being a logical man, the author has to precede this entry with a few lines on the anatomical character of the genus *Daphnia*, the subfamily Daphniinae, and the family Daphniidae. In contrast, *Xenopsylla cheopis* receives only two pages, to cover not only the anatomy and biology of this very important insect, but also its relation to plague and to murine typhus. The reader will therefore regret that so much space is given to rarities and creatures which are on or even beyond the borderline of the subject, and may feel that the information on the principal insects of medical importance is short and imperfect. Occasional errors have crept into the text, in spite of the author's very great knowledge of the subject. There is, for instance, a confusion between the screw-worm fly of America, *Chrysomyia hominivorax*, (exclusively parasitic and of great veterinary importance) and the quite distinct *C. macellaria* (breeding only in carcases). The statement that we are ignorant of the pathogenic importance of *Phlebotomus minutus* might mislead, for it is almost certainly an insect which sucks reptiles and nothing else.

The text includes several excellent maps of geographical distribution of biting insects. *P. A. Buxton.*

NIÑO (Flavio L.). **Contribución al estudio de las blastomicosis en la República Argentina. (Revisión de las blastomicosis observadas en el país y estudio de nuevas observaciones.)** [Blastomycosis in the Argentine Republic.]—*Bol. Inst. Clin. Quirurg.* Buenos Aires. 1938. July. Vol. 14. No. 117. pp. 591–1042. With 271 figs., 61 plates, 15 charts & 1 map. [519 refs.] English summary.

The whole of this issue of the *Boletin*, 450 pages, is given up to a study by Professor Flavio Niño of Blastomycosis in the Argentine, in particular, as designated in the subtitle, a review of blastomycosis and an account of new observations on the disease in the country. It would have been worth publishing as a separate book or as a special

number, rather than as a routine issue of the University's *Boletin*, since it is practically a monograph on a subject of great interest not only in the Argentine but in other warm climates also. The work is described in thirteen chapters, the last of which contains the summary. We can do little more here than indicate the scope of the study. Chapter I deals with generalities and the author's classification into three main groups, each of which is dealt with in detail subsequently. Next follows a brief historical section. Chapters III and IV are concerned with Group I, the Blastomycoses proper, describing the strains found in the Argentine with a key to their classification and identification and illustrative cases of infection by them. Plates are reproduced showing the growth characteristics on artificial media and their microscopic appearances. Among this group is placed cryptococcal granuloma, and experiments are recorded of the results of inoculation of cultures into rats and rabbits. The ensuing three chapters, VI–VIII, describe Group II or Parablastomycoses, and this term includes paracoccidioides granulomata, Gilchrist's systemic blastomycosis of North America; this was first studied by Gilchrist in 1894 and noted to differ from granuloma associated with Coccidioides. In this group also is placed Darling's Histoplasmosis or systemic parasitic reticulo-histiocytosis. Group III, described in the next three chapters, is that of the Pseudoblastomycoses and includes Posada's disease or coccidioidal granuloma, Rhinosporidiosis seeberi, and the chromomycotic granulomata—*Phialophora verrucosa* and *Hormodendron* (or *Acrotheca*) *pedrosoi*—which have repeatedly received mention in this *Bulletin*. The twelfth chapter describes shortly the geographical distribution of Blastomycosis in the Argentine. The whole is copiously illustrated by 61 plates and 271 figures and photomicrographs, several of the former being in colour. This monograph will doubtless hold its place as the standard work of reference on the subject for a long time. *H. H. S.*

GIORDANO (Mario) [Colonnello Medico della R. Marina, Libero Docente in Patologia Coloniale]. **Medicina ed Igiene Coloniale. Ad Uso degli Ufficiali, Funzionari Coloniali, Militari di Sanita, Infermieri, Missionari, ecc.** [Medicine and Tropical Hygiene.] Second Edition revised and enlarged.—pp. xii+626. With 1 folding map & 204 figs. (6 coloured). 1939. Milan: Ulrico Hoepli. [Lire 24.]

In a preliminary "puff" by the editor is the statement that this book by its simplicity of exposition, its clarity and the care taken to set forth the chief features of conditions and diseases in the tropics will specially appeal to nurses, Red Cross officials, sanitary officers and missionaries.

The remarks made in the review of the first edition in 1930 [this *Bulletin*, 1930, Vol. 27, p. 862] are just as applicable to this new issue. It is eminently readable, the diction is easy, clear and straightforward, the illustrations are, with few exceptions, remarkably good, but, as was said before, it is difficult to place the work. It contains far too much for the layman and omits far too much for the medically trained. This second edition is longer by 71 pages and contains 74 more figures than the first, but a thinner paper has been used and the size of the book remains unchanged and as handy as before. Forty pages of the increase have been inserted in the first chapter dealing with the structure and functions of the human body. Presuming that the work

is aimed to serve the more educated and responsible non-medical official, illustrations will prove a greater help than letterpress; and the fact that, for example, leprosy now has 3½ pages of description and 9 figures, in place of 3 pages and 4 figures is explained and justified. The treatment of cholera occupies 11 lines and is said to be symptomatic by means of laudanum, stimulants, warm baths, and large enemata; nothing is said of hypertonic salines. Inequalities which are not easy to explain are many; for example, tabardillo (Mexican typhus) has five lines, fièvre boutonneuse six, while a whole page is given to murine typhus. Again, for a work on Colonial Medicine and Hygiene, two lines seem inadequate for preventive vaccination against plague. The advances in treatment of malaria —the use of plasmoquine and atebrin—are brought up to date. Illustrations of African trypanosomiasis have been increased from 10 to 18 and on the whole are very well reproduced; the error, or at least the unproven statement, that there is a goitrous form of chronic Chagas' disease is left uncorrected. The transmitter of yellow fever goes under the name *Stegomyia fasciata*, though, it is true, *Aëdes aegypti* does receive casual mention as a synonym or alternative.

Certain alterations have been made in the arranging of subsections for which it is not easy to account. Thus *yaws* in the former edition was placed in the section of diseases transmitted by animals, now we find it under "diseases of cutaneous or transcutaneous origin," and under the same head come glanders, anthrax and melioidosis, while malaria, kala azar, three-, five-, and seven-day fever and yellow fever are included under "diseases transmitted by animals," and Weil's disease among those transmitted by water or food. Man is said to be a possible intermediate host of *T. saginata* and *Cysticercus bovis* is said to infest man. Inequality of treatment is exemplified in 22 lines being given to *F. bancrofti*, twice that to Dracunculus, 23 to beriberi, 24 to scurvy and 10 each to pellagra and sprue (which is described as "probably an intestinal infection caused by Monilia").

The work is very comprehensive and deals, in addition to the diseases of warm climates, with emergencies, poisoning and its treatment, artificial respiration, surgical instruments needed or used in major or minor operations; the microscope, laboratory examinations and entomological technique are described, and there are sections treating of disinfection, quarantine and sanitary legislation, and in conclusion a vocabulary of the more common terms used in medicine and their definition, such as abrasion, agar, albinism, alkaline, borborygmi, bournous, Bunsen burner, germ, laxative, obesity, prognosis, prophylaxis, protein, punkah—a strange mixture. In conclusion, let us repeat, the work is handy, truly a pocket manual, is well printed and well illustrated, imparts much useful information to the layman and affords the medical man food for thought. *H. H. S.*

HAILEY, Baron [G.C.S.I., G.C.I.E.]. **An African Survey. A Study of Problems arising in Africa South of the Sahara.** Issued by the Committee of the African Research Survey under the Auspices of the Royal Institute of International Affairs.—pp. xxviii+1837. With 6 maps (3 coloured). 1938. London: New York: Toronto: Humphrey Milford, Oxford University Press. [21*s.*]

The chapter on health in this comprehensive survey of African conditions is divided into sections. Section 1 deals with the early medical work undertaken by Europeans, and pays tribute to the

humanitarian activities of the missionaries, from the eighteenth century onwards, who brought European medicine to the Africans. Section 2 gives short accounts of the principal diseases in Africa and indicates the general lines on which control is attempted. Section 3 deals with the international organizations concerned with health, and sections 4 to 7 indicate the organizations and policies adopted in British, French, Belgian and Portuguese territories. The conditions in British territories vary considerably between those in the Union, with its comparatively highly developed industrial life, and those in the remoter parts of East and West Africa. As is perhaps to be expected, the facilities for training in tropical medicine are better in England than in the other countries named.

Section 8 is concerned with the medical education of Africans and section 9 with the health policies of the various governments.

The chapter on health will appeal to those whose duty it is to co-ordinate all the activities of government. The exposition is lucid without being dogmatic, and the problems are set out briefly but clearly. Advantage has been taken, as may be seen by references in footnotes, of much recent literature on the diseases discussed. It consists largely of a statement, comparative account and criticism of the medical policies adopted by the various governments. To medical men it will be interesting in that it discusses the methods adopted by the French, Belgians and Portuguese. Beyond that there is little that is not known by those who practise in Africa.

Lord Hailey, while recognizing the value of arguments for and against, criticizes the expenditure of money on British hospitals. He thinks that, except in those designed for teaching purposes, too much may have been spent on them and that the money might have been used more advantageously in providing facilities of a simpler type spread over larger areas. He states that "disease of the type which causes most mischief in Africa is generally a mass infliction, and must be attacked in the mass." It cannot be denied that many diseases are more successfully attacked by sanitary measures and education, which can only be successfully undertaken by widespread approach to the natives in their own districts, but since successful persuasion of uneducated peoples depends so largely upon their faith in their instructors, and since that faith, in medicine, is most easily and thoroughly encouraged by the experience of the cure of disease, there must be a balance between curative and preventive medicine, and in the early stages the former should be given precedence. Africa does not yet possess sufficient medical facilities to satisfy conscientious clinicians and to attempt to set a lower standard of these in hospitals so as to further a more widespread but less exact method of dealing with the mass of the people is not a project that will appeal to some of those who see not only the immediate results of their work on individuals but also the effect of that work on whole populations. There is much to be said for efficient modern hospitals to which outlying dispensaries can refer their cases. The diseases from which Africans suffer are by no means all tropical diseases.

The section on health education stresses perhaps the most important aspect of the attack on disease. "The most difficult problem of the health services does not, however, lie in enforcing anti-epidemic measures, but in persuading Africans to adopt the recognized principles of hygiene as part of their social habit . . . The sanitary services must now undertake an education in health matters which will replace

the advice given by native practitioners and also many of the prescriptions of African custom." Nobody can criticize that conclusion, but it could with advantage be added that the education should be standardized and be conducted on a definite plan.

In chapter 24 a proposal is made that a sum of money should be spent annually on research in all departments, and that this should be administered by a committee of the Privy Council or other body, and that a bureau for the collection and distribution of knowledge concerning Africa should be instituted. There is no doubt that the first suggestion would lead to greatly increased efficiency, but, from the point of view of medical work, it would seem preferable to conduct research through an organization which would include the whole of the Colonial Empire rather than be confined to Africa. With regard to medicine the second suggestion is already dealt with by the Bureau of Hygiene and Tropical Diseases.

The book as a whole is a unique production and should be read by all interested in African problems. A survey of Africa is a massive project which could only be carried through with the help of considerable numbers of people. The extent to which Lord Hailey has availed himself of these is seen in the list of acknowledgments at the end. Omissions and errors are inevitable, but may be corrected in future editions. For instance, on page 1128, in the account of preventive inoculation against yellow fever, no mention is made of the pioneer work of HINDLE and (independently) ARAGÃO in 1928 which did so much to make vaccination possible. Another example occurs on page 1618 in which the Bureau of Hygiene and Tropical Diseases is stated to be supported by the Colonial Office and to have issued the *Tropical Diseases Bulletin* since 1931. Actually the Bureau is supported by a Parliamentary Grant-in-Aid and by contributions from the Governments of the various Dominions, Colonies, Protectorates, and Indian Provinces and from the Indian Research Fund Association, and has issued the *Tropical Diseases Bulletin* from 1912, and the *Bulletin of Hygiene* from 1926, up to the present time. Both Bulletins are increasingly demanded by workers at home and abroad.

C. W.

Printed under the authority of HIS MAJESTY'S STATIONERY OFFICE
By The South Essex Recorders, Ltd., Ilford.

(2097) Wt. P11/202 1875 12/38 S.E.R. Ltd. Gp. 353.

Publications of the Bureau of Hygiene and Tropical Diseases.

TROPICAL DISEASES BULLETIN

containing classified summaries of current papers and reports from the medical and scientific publications of the world on diseases of the tropics and warm countries. (ISSUED MONTHLY.)

Subscription rate (in advance): 21 shillings per annum post free. The subscription runs from January to December. Single numbers 2s. 6d. each.

SUPPLEMENT TO THE TROPICAL DISEASES BULLETIN

summarizing the Annual Medical and Sanitary Reports from British Colonies, Protectorates and Dependencies.

(ISSUED ANNUALLY.)

Back Supplements can be supplied as follows:—

Dec. 1931	SUPPLEMENT	dealing	with	the	Annual	Reports for 1929.	Price 2s. 6d. net
Oct. 1932	,,	,,	,,	,,	,,	1930.	Price 2s. 6d. net
Oct. 1933	,,	,,	,,	,,	,,	1931.	Price 5s. 0d. net
Dec. 1934	,,	,,	,,	,,	,,	1932.	Price 5s. 0d. net
Nov. 1935	,,	,,	,,	,,	,,	1933.	Price 7s. 6d. net
Oct. 1936	,,	,,	,,	,,	,,	1934.	Price 7s. 6d. net
Nov. 1937	,,	,,	,,	,,	,,	1935.	Price 7s. 6d. net
Nov. 1938	,,	,,	,,	,,	,,	1936.	Price 7s. 6d. net

The Subscription rate for the TROPICAL DISEASES BULLETIN with SUPPLEMENT is 25s. per annum.

BULLETIN OF HYGIENE

containing classified summaries and reviews of publications on all branches of public health and preventive medicine.

(ISSUED MONTHLY.)

Subscription rate (in advance): 21 shillings per annum post free. The subscription runs from January to December. Single numbers 2s. 6d. each.

To insure the uninterrupted receipt of the Bureau's publications for 1939 subscribers who have not yet renewed their subscriptions are requested to fill in at once and return to the Bureau the Banker's Order Form overleaf or to forward the amount of their subscription with the accompanying order form to the

BUREAU OF HYGIENE AND TROPICAL DISEASES,
KEPPEL STREET,
LONDON, W.C.1.

Cheques and Postal Orders should be made payable to the "BUREAU OF HYGIENE AND TROPICAL DISEASES," and crossed "WESTMINSTER BANK, LTD."

SUBSCRIPTION FORM.

Please send the* { BULLETIN OF HYGIENE ... ... (21s.) / TROPICAL DISEASES BULLETIN (without SUPPLEMENT) ... ... (21s.) / TROPICAL DISEASES BULLETIN (with SUPPLEMENT) ... ... (25s.) } for 1939

to

Name_____

Address_____

_____

for which I enclose the sum of

_____†

Date_____ Signature_____

* Cross out publication or publications not required.

† Please fill in the correct amount to cover subscription or subscriptions required.

PUBLICATIONS OF THE BUREAU OF HYGIENE AND TROPICAL DISEASES.

STANDING ORDER TO BANKERS.

[To be returned to the
BUREAU OF HYGIENE AND TROPICAL DISEASES,
KEPPEL STREET,
LONDON, W.C.1.]

Please pay on receipt of this order, and annually thereafter on the 1st January to the Westminster Bank Limited, Euston Road Branch, 2, Hampstead Road, N.W.1, the sum of*

.....

to the credit of the BUREAU OF HYGIENE AND TROPICAL DISEASES, and charge my account with the same until further orders.

Signature.....

Date.....

Name of Bank.....

Branch.....

---

*Please fill in the correct amount to cover the subscription or subscriptions required.

The yearly subscription rates are:—

BULLETIN OF HYGIENE, **21s.** (post free).

TROPICAL DISEASES BULLETIN (without SUPPLEMENT) **21s.** (post free).

TROPICAL DISEASES BULLETIN (with SUPPLEMENT) **25s.** (post free).

THE HOSPITAL FOR TROPICAL DISEASES

is open to ALL sufferers from Diseases peculiar to the Tropics. H.M.'s Government Offices have entered into official arrangements for the treatment of Officials in Private Wards. The Ministry of Pensions recommend Officers and others for special treatment; and certain large commercial firms, in consideration of their annual subscriptions, enjoy special terms for the benefit of their members.

ADMISSION

may be obtained to Private Rooms, two-bedded Rooms and larger Private Wards on moderate terms either through the Honorary Medical Staff, or in suitable cases, through the Out-Patient Department. Seamen and all necessitous persons are treated free.

Laboratory investigations constitute a special feature of the Hospital régime; these facilities are available for medical practitioners.

EDUCATION.

In the General Wards is found the unrivalled variety of clinical material, drawn from all parts of the Tropical Zone, which is placed at the disposal of the students of the London School of Hygiene & Tropical Medicine, and others.

Special Courses in Tropical Nursing are held twice a year.

In 1897, Sir Patrick Manson began in London his work among the Seamen who are the special care of the Seamen's Hospital Society, and the Voluntary Corporation to-day maintains this Special Hospital.

Enquiries to the Resident Secretary, Hospital for Tropical Diseases, 25, Gordon Street, London, W.C.1.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

(UNIVERSITY OF LONDON)

Incorporating the Ross Institute

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE (Eng.)

Dates of the Courses, 1939.

PART I (3 months)—January 3rd–March 24th, 1939; April 3rd–June 23rd, 1939.

PART II (2 months)—January 16th–March 17th, 1939; April 17th–June 16th, 1939.

FEES (inclusive): Part I £25; Part II £15.

DIPLOMA IN PUBLIC HEALTH (University of London)

Courses of Study (whole time, nine months) commencing in September—inclusive fee 54 guineas.

DIPLOMA IN BACTERIOLOGY (University of London)

Course of Study (whole-time, one academic year) commencing in October—inclusive fee, £47 15*s*.

COURSES IN PSYCHOLOGY AND PHYSIOLOGY APPLIED TO INDUSTRY.

Two courses are provided. One lasts an academic year. The other is an intensive course lasting a fortnight in February.

EPIDEMIOLOGY AND VITAL STATISTICS

Special three-monthly advanced Courses—inclusive fee 7 guineas.

For Prospectuses and Synopses of Lectures, etc., apply to the Secretary, London School of Hygiene and Tropical Medicine, Keppel Street (Gower Street), London, W.C.1. (Museum 3041.)

M&B 693

(DAGENAN)*

2-SULPHANILYL-AMINOPYRIDINE

The latest May & Baker contribution to chemotherapy

in gonococcal infections

Clinical trials in male cases of gonorrhœa have shown that there is a rapid response to M & B 693, the gonococci disappearing and symptoms clearing up with remarkable celerity. Where early adequate treatment is given complications are infrequent and relapses rare. The individual tolerance of patients varies, but given in appropriate amounts the drug is relatively non-toxic in effective dosage.

in pneumococcal infections

Early clinical trials with M & B 693 convincingly demonstrated its value in **lobar pneumonia** (*The Lancet, July 2nd,* 1938). Later reports showed its activity in other pneumococcal infections including **pneumococcal meningitis** (*The Lancet, September 10th,* 1938, *and September 24th,* 1938): and **pneumococcal septicæmia** (*The Lancet, September 10th,* 1938).

in other conditions

M & B 693 exerts a valuable therapeutic effect in **meningococcal** (*The Lancet, May 28th,* 1938), and **staphylococcal infections,** (*The Lancet, Sept. 17th,* 1938).

★ TRADE MARK

M & B 693 is available in the following packs: Containers of 25 tablets and 100 tablets.

PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD., DAGENHAM